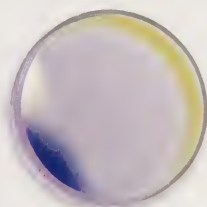


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Where to Write or Call for Information

General Information on Graduate Education

Office of Graduate Studies
B-356 ASB, (801) 378-4091

Admissions

Graduate Admissions
B-356 ASB, (801) 378-7367

Campus Visits and Tours

Hosting Services
HOST, (801) 378-4678

Graduate School of Management

730 TNRB, (801) 378-4121

International Student Office

121 KMB, (801) 378-2844

Law School Admissions

340 JRCB, (801) 378-4277

Records

B-180 ASB, (801) 378-2631

Registration

B-130 ASB, (801) 378-2824

Scholarships and Awards

Individual academic departments

Student Loans

Financial Aid Office
A-41 ASB, (801) 378-4104

Student Employment

Employment Office
C-40 ASB, (801) 378-3561

Student Housing

Housing Office
C-169 ASB, (801) 378-2611

Tests (GRE, GMAT, LSAT, and MILLER)

Testing Center
265 HGB, (801) 378-6129

Tuition and Fees

Cashier's Office
D-155 ASB, (801) 378-7808

Veterans Affairs

Veterans Affairs Office
390 SWKT, (801) 378-4371

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The university makes every effort to ensure the accuracy of the contents of this catalogue but reserves the right to make changes at any time without prior notice.

Statement of Nondiscrimination—Admission to Brigham Young University is nondiscriminatory. The university admits persons of any sex, race, creed, religion, or national origin who meet university and department academic requirements and agree to abide by the university's standards of conduct and honor code. Qualified handicapped students are admitted.

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THE UNIVERSITY

Brigham Young University offers an educational opportunity for the well-prepared graduate student who is seeking an environment where learning experiences with dedicated scholars characterize graduate study. Established and sponsored by The Church of Jesus Christ of Latter-day Saints, BYU is the largest privately owned university in the United States. The university president, Jeffrey R. Holland, is directly responsible to the Board of Trustees, led by the President of The Church of Jesus Christ of Latter-day Saints and composed of Church authorities. In a time of constantly changing human values and increased challenges for higher education, BYU holds steadfastly to a singular vision that combines reasoned and revealed learning. Along with extensive undergraduate programs, BYU offers master's and doctoral degrees in a variety of disciplines through 57 graduate departments. In addition, the Law School and the Graduate School of Management offer professional graduate degrees.

Founded in 1875 as Brigham Young Academy, the campus has grown from one building to nearly 450 buildings on more than 600 acres. Its first class of 29 students was taught by the academy's founding scholar, Karl G. Maeser. Now 1,300 full-time faculty instruct nearly 27,000 students. From its modest beginnings Brigham Young University has grown to become one of the nation's most distinguished institutions of private higher education. At BYU teaching and scholarly research are valued as essential complements to each other. Faculty and students work side by side in collegial scholarship enhanced by mutual commitment to the highest ideals of professional ethics and spiritual values.

Situated at the foot of the beautifully rugged Wasatch Range of the Rocky Mountains and bounded on the west by twenty-three-mile-long Utah Lake, the campus is the focal point of a city of 81,000 and a valley of 250,000. Beyond it to the south and east are spectacular areas of vast sandstone canyons and monoliths, several of which are now national parks. Forty-five miles north is Salt Lake City.

The faculty at BYU have been schooled at some of the nation's leading universities, and many of them have achieved national and international prominence as teachers and scholars.

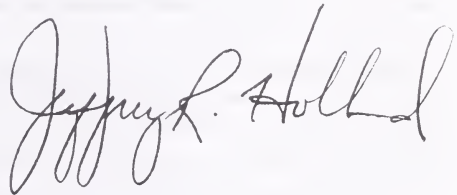


FROM THE PRESIDENT . . .

The Graduate Studies Catalogue serves many purposes, not the least of which is an introduction to the programs and courses offered by departments at Brigham Young University. It should be apparent to the user of the catalogue, however, that the programs and resources described here are also an index to the wider array of opportunities the university offers a graduate student. Here are the faculty, here is the university's mission statement, here is its honor code, here are its libraries, laboratories, museums, institutes, and centers.

Through this catalogue the graduate student at Brigham Young University can learn about degree requirements and procedures, about special services and opportunities, about the extra-mile effort that is required of the student who has ventured beyond baccalaureate work.

Many paths to intellectual achievement are suggested here. Through intensive scholarly study under the guidance of an exceptional faculty at Brigham Young University, the inquiring and spiritually sensitive student will explore new avenues of thought and discover new capacities for growth.

A handwritten signature in black ink, reading "Jeffrey R. Holland". The signature is written in a cursive style with large, flowing letters.

Jeffrey R. Holland

ABOUT THIS CATALOGUE

This catalogue serves as a graduate supplement to the Brigham Young University General Catalogue. General information about policies, procedures, services, and personnel that are not specific to graduate study are described in detail in that bulletin.

Introductory and concluding sections of this catalogue do, however, provide general information about graduate study at Brigham Young University, including details about admissions procedures and requirements that apply across the university. The large center portion of the catalogue contains graduate program descriptions and course listings; these appear in alphabetical order by college and then by department within the college. Departments at BYU are organized into strong administrative college units, and graduate programs are the responsibility of college deans and department chairmen. Special research centers, facilities, and activities are described in the college sections, with interdisciplinary facilities and programs appearing in the college that has primary responsibility for them.

Policies and requirements in the general information section reflect standards of *minimum* performance and may be less stringent than those established by individual departments. Most departments have printed materials of their own describing in detail their programs, deadlines, expectations, and opportunities for financial assistance. Therefore, any potential applicants should notify prospective departments of their interest and request printed information from those departments. Some application deadlines are as early as January, and some departments admit new students only once a year, so early inquiry is recommended.

Entering students should plan their total study programs early in their first semester because most graduate courses are not offered every term or even every year. Course listings in this catalogue indicate when particular courses are available. Missing a course one semester could mean a delay of one or more years for the student who fails to plan ahead. The university requires submission of a study list by the end of the student's first term or semester in a program.

The Law School and the Graduate School of Management publish their own bulletins, and they require a different application form than that used for other graduate programs. Furthermore, the Law School follows a different calendar. Prospective applicants to these professional schools should write directly to them.

THE ADMINISTRATION OF BRIGHAM YOUNG UNIVERSITY

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For a complete listing of university officers, see the BYU General Catalogue.

Brigham Young University is fully accredited by the Northwest Association of Schools and Colleges. In addition, many professional programs of the university are reviewed, evaluated, and accredited by national and state associations and boards.

For a complete listing of organizations that have given full accreditation to related programs at the university and of educational associations with which the university is affiliated, see the BYU General Catalogue.

MISSION OF BRIGHAM YOUNG UNIVERSITY

The mission of Brigham Young University—founded, supported, and guided by The Church of Jesus Christ of Latter-day Saints—is to assist individuals in their quest for perfection and eternal life. That assistance should provide a period of intensive learning in a stimulating setting where a commitment to excellence is expected and the full realization of human potential is pursued.

All instruction, programs, and services at BYU, including a wide variety of extracurricular experiences, should make their own contribution toward the balanced development of the total person. Such a broadly prepared individual will not only be capable of meeting personal challenge and change but will also bring strength to others in the tasks of home and family life, social relationships, civic duty, and service to mankind.

To succeed in this mission the university must provide an environment enlightened by living prophets and sustained by those moral virtues which characterize the life and teachings of the Son of God. In that environment these four major educational goals should prevail:

- All students at BYU should be taught the truths of the gospel of Jesus Christ. Any education is inadequate which does not emphasize that His is the only name given under heaven whereby mankind can be saved. Certainly all relationships within the BYU community should reflect devout love of God and a loving, genuine concern for the welfare of our neighbor.
- Because the gospel encourages the pursuit of all truth, students at BYU should receive a broad university education. The arts, letters, and sciences provide the core of such an education, which will help students think clearly, communicate effectively, understand important ideas in their own cultural tradition as well as that of others, and establish clear standards of intellectual integrity.
- In addition to a strong general education, students should also receive instruction in the special fields of their choice. The university cannot provide programs in all possible areas of professional or vocational work, but in those it does provide the preparation must be excellent. Students who graduate from BYU should be capable of competing with the best in their fields.
- Scholarly research and creative endeavor among both faculty and students, including those in selected graduate programs of real consequence, are essential and will be encouraged.

In meeting these objectives BYU's faculty, staff, students, and administrators should also be anxious to make their service and scholarship available to The Church of Jesus Christ of Latter-day Saints in furthering its work worldwide. In an era of limited enrollments, BYU can continue to expand its influence both by encouraging programs that are central to the Church's purpose and by making its resources available to the Church when called upon to do so.

We believe the earnest pursuit of this institutional mission can have a strong effect on the course of higher education and will greatly enlarge Brigham Young University's influence in a world we wish to improve.

STANDARDS OF CONDUCT

The Brigham Young University Code of Honor as established by the university and the board of trustees for all students under its jurisdiction in institutions of higher learning appears in the Graduate Studies Application Form and the BYU General Catalogue. The substance and essence of that code is described more fully in the following statement:

Brigham Young University is unique among universities. Governed by principles basic to its sponsoring church, The Church of Jesus Christ of Latter-day Saints, it purposefully creates and nurtures an environment in which faith and intellect join together in the pursuit of truth.

All members of the Brigham Young University community—students, faculty, staff, and administrators—agree to live by the values of the gospel of Jesus Christ as found in the standard scriptural works of the Church and the teachings of Church leaders past and present. In essence, then, those who study and work here promise to live lives of kindness, honesty, chastity, virtue, and faithfulness. They promise to do good to their neighbors and to seek after whatever is “virtuous, lovely, or of good report or praiseworthy” (13th Article of Faith).

Such behavior is firmly rooted in eternal principles that have been cherished and articulated by the prophets and other wise men and women throughout the history of civilization. The great thinkers, writers, artists, statesmen, and scientists have taught the importance of life with honor. Beyond the profound thoughts of these men and women, however, are the sacred, inspired writings of God’s prophets. Although good principles can be found in the best of mankind’s creations, the ultimate power of these and all true principles is found in the gospel of Jesus Christ.

In practical terms, this means a high standard of conduct is expected of those who join the university community. As sons and daughters of God, all at BYU must strive to grow steadily in faith, intelligence, love, and integrity. All agree to follow the moral teachings of Jesus Christ and the living prophets, and to be honorable and compassionate in their dealings with others. All agree to observe in letter and spirit the principles of health contained in the Word of Wisdom, specifically, to abstain from alcohol, tobacco, tea, and coffee, and from the abuse of drugs and other harmful substances. All agree to be honest in work and in human associations, never taking unfair advantage of others, never representing the work of others as their own, endeavoring to help others to reach their highest goals.

Code of Honor

Students and faculty members at Brigham Young University have prepared the Code of Honor, recognizing that it is a covenant between each person and all other members of the community, a covenant by which the community grants the privileges and opportunities of citizenship and each person within the community accepts two fundamental responsibilities: (1) to maintain personal integrity by living the code and (2) to maintain the integrity of the community by helping others live the code.

The successful functioning of the Code of Honor, indeed of the university itself, depends on mutual confidence and trust among students, faculty members, and staff. Unless each is assured that the other will uphold the compact, the code will fail and the university will be diminished. Moreover, students and faculty members share a joint responsibility for hearing and evaluating reports of honor code infractions.

The university’s very being is at stake in this matter. Its certification that a person has completed a class, a course of study, or the requirements for a degree is without value if the person obtained that certification through dishonesty. Similarly, a faculty member’s name and university affiliation on the report of a piece of research must signify that the work

and the report are honest. Examination papers, laboratory work, essays, theses, projects, research tools, and all other kinds of work for classes and degrees are to be prepared with no use having been made of unauthorized or undocumented materials of any kind. Students are not to give or receive aid in examinations or in class work where such is not permitted. Any individual violation of the Code of Honor compromises every member of the community; therefore, the entire community has a deep-rooted investment in the honesty of every person at BYU.

In essence, then, a scholarly publication, grade, certification, or diploma from Brigham Young University should and must have special and particular significance with regard to honor.

Dress and Grooming Standards

The attire and grooming of both men and women should always be modest, neat, clean, and appropriate. See the Graduate Studies application and the BYU General Catalogue for a detailed description of specific requirements. Registration at BYU constitutes an affirmative consent to abide by these standards and to represent the university and its sponsoring church in a manner that is becoming and dignified.

Continuing Ecclesiastical Endorsement Interviews

Each winter semester students who plan to enroll for the following fall semester will be required to have a Continuing Ecclesiastical Endorsement interview with the bishop of the ward where their Church records are maintained while they are enrolled at BYU. The purpose of this interview is to determine each student's commitment to BYU standards of conduct, including the Honor Code and the Dress and Grooming Standards. Non-LDS student interviews may be conducted by a local ecclesiastical leader or through the Student Life office. The dean of Student Life or the student's campus bishop can provide more information.

GRADUATE STUDY AT BRIGHAM YOUNG UNIVERSITY

Dean: Marilyn Arnold, Professor of English, D-341 ASB, 378-2274

Assistant Dean: Darwin L. Hayes, Associate Professor of English, B-356 ASB, 378-4091

Brigham Young University intends to be selective in the graduate programs it offers, to admit only highly qualified students, and to do very well those things it chooses to do. A university is a place where men and women of character meet minds and ideas that have shaped and will continue to shape human experience in significant ways. It is a place where people read and think and create and analyze, and where they give expression to ideas. It is a place of intellectual and moral broadening and deepening. The aim of advanced study is not to prove the old cliché about learning more and more about less and less, but to disprove it by contributing new knowledge and arriving at new levels of understanding.

In its statement of the principles of graduate education at Brigham Young University, the Graduate Council defines the essence of graduate study as “insight, seeing with ‘new’ eyes, hearing with ‘new’ ears, heightened perception leading to broader and deeper conception.” Furthermore, the council states,

the measure of the quality of our graduate programs will not be how many students are involved, not how many jobs are available, nor for what salaries graduates are hired. Rather, it will be the degree to which the graduate work brings the student to new perspectives, the extent to which the experience gathers the practical within the theoretical, the extent to which programs enlighten necessary skills with universal understanding, the extent to which they lead students to the theoretical life—a life in which one learns not only to do, but to observe, to contemplate, to comprehend, to understand, and to see widely and clearly, and, finally, to express what has been found.

Brigham Young University offers doctoral and master's degrees in a broad range of fields, as well as professional degrees in law and management. The doctoral degree requires the student to demonstrate a high level of scholarly competence, which includes the ability to conduct and report significant research in a highly effective way. Advanced systematic study in a discipline is also essential, and it is followed by comprehensive examinations that require students to integrate and understand the collective knowledge of their disciplines. An impeccably written dissertation resulting from independent research is scrutinized and tested in a concluding oral examination. The master's degree also requires advanced course work, demonstrated mastery in vital aspects of a discipline, skill in research methodology and theory, and preparation for future creative work. Nearly all master's programs at Brigham Young University require integrating examinations and a major culminating piece of written work—usually a thesis, sometimes a project—and an oral examination on that work.

THE GRADUATE COUNCIL

Consisting of senior faculty members from a variety of disciplines, and chaired by one of its own members, the Graduate Council is one of five faculty groups with major responsibility for academic programs and standards across the campus. The others are the Faculty Advisory Council, the Curriculum Council, the General Education Council, the Library Council, and the Council on Continuing Status and Advancement in Rank.

The primary responsibility of the council is to establish and maintain standards of quality in graduate education at Brigham Young University. In discharging this responsibility, the council sets policy, conducts extensive reviews of colleges and departments, evaluates proposals for new programs, makes recommendations to the provost on a variety of issues affecting graduate education, and works in teams to improve the quality of individual programs.

The goal of the council is to ensure that only truly excellent graduate programs are offered at BYU. Thus, the university is engaged in a continuing effort to consolidate resources behind strong programs and withdraw them from weaker ones. The number of programs is being reduced and remaining programs are being strengthened, resulting in a better, more demanding graduate experience.

Current members of the Graduate Council are:

1987-88

Ivan T. Call, Chairman, Business
Douglas N. Bennion, Chemical Engineering
Ronald D. Bingham, Educational Psychology
Kimball T. Harper, Botany
W. Ladd Hollist, Political Science
Thomas J. Mathiesen, Music
J. Keith Rigby, Geology

1988-89

Douglas N. Bennion, Chemical Engineering
Ronald D. Bingham, Educational Psychology
Rex G. Cates, Botany
C. Wilfred Griggs, Ancient Scripture
W. Ladd Hollist, Political Science (on leave)
Rosalie Rebollo Pratt, Music
J. Keith Rigby, Geology

THE OFFICE OF GRADUATE STUDIES

Although departments and colleges carry the major responsibility for graduate programs at BYU, certain kinds of things are done centrally. The admissions process begins in the Office of Graduate Studies, and progress toward a degree is recorded there. The office also maintains standards and requirements that apply uniformly across campus and serves as a clearinghouse for questions, problems, exceptions to policy, and requests for policy changes. The office is staffed by advisors thoroughly familiar with policies and procedures at the general university level. It is in the student's home department, however, that the most important advising is done in regard to individual program requirements and procedures. It is essential that a student consult frequently with departmental advisors. In many instances department requirements exceed university minimums.



*I seem to have
been only like a boy
playing on the seashore . . .
now and then finding
a smoother pebble or a
prettier shell than
ordinary, whilst the
great ocean of truth
lay all undiscovered
before me.*

Sir Isaac Newton

Research at a university is a search for knowledge and truth, a search that binds, in a common pursuit, all members of the university community—from freshmen to senior faculty. In undergraduate education, students undertake the search primarily in the classroom and in textbooks, where they encounter an important inherited body of knowledge. For graduate students and faculty, however, the search broadens and deepens to encompass new levels of observation and thought.

At Brigham Young University, the quest for new knowledge through scholarly research takes many forms. Modern laboratory explorations range from the subatomic world to the expanses of our solar system, from the chemistry of living cells to the health of the human body. The most advanced computer and electronic technologies are used in the modeling of combustion processes, in computer-aided design and imaging, in rapid complex signal-processing, and in the development of computer-aided educational systems.

Faculty and students are investigating native plants in Samoa and seeking archaeological relics in Egypt and Central America, collaborating in every discipline to achieve greater understanding of nature and humanity.

Estimable scholarly activity at a university is not a luxury—it is a necessity. Without it, undergraduate students would be denied the opportunity to share the educational experience with scholars, both seasoned and apprentice, who are themselves learning in a dynamic atmosphere of discovery. Without it, society would suffer the stasis of unrealized possibilities. If all research were done in settings where the pure search for knowledge and truth is valued less than the expediency of financial profit, and all researchers were merely trained for a task rather than educated for a life, our world would be less humane and surely less sane. At Brigham Young University, the search is ennobled through scholarship refined by spiritual insight and through education anchored in faith.



Dedicated faculty, students, and staff in every discipline are advancing research at the university. The following pages highlight a few of several prominent programs.

Searching for more efficient uses of the world's diminishing supplies of fossil fuel has been a major endeavor at BYU for more than a decade. Faculty and student research includes significant work with the chemical properties, conversion, and combustion potential of coal.

Recognizing BYU as a leading center for interdisciplinary energy research, the National Science Foundation (NSF) recently selected Brigham Young University and the University of Utah—from more than 100 applicants—to establish the Advanced Combustion Engineering Research Center (ACERC), one of only 14 NSF-sponsored engineering research centers.

ACERC is committed to developing and implementing advanced computer-aided design methods for combustion systems that emphasize clean and economical use of low-grade fuels.



Advanced laser diagnostics provides valuable insights into complex combustion processes. Center facilities also include a link with the NSF Cray Supercomputer network.





Engaged in a race with time and the inevitable encroachments of modern civilization, university botanists are attempting to learn more about myriad plant specimens indigenous to the islands of the South Pacific. From rapidly diminishing island rain forests, thousands of little known—or unknown—plants need to be collected, identified, and analyzed. In addition, BYU botanists are trying to learn and record highly sophisticated, but vanishing native traditions involving plant use. For centuries islanders have used complex plant compounds in everything from toxins and preservatives to potent healing agents. On Samoa alone there are some 900 plant species, 20 percent of which are endemic to the island. The traditional pharmacopoeia for Samoan healers includes at least 150 flowering plants and ferns.



The white-flowering Madagascar Periwinkle, a medicinal plant, is one of nearly 2,500 species cultivated in university greenhouses for research and classroom use.

At the Computer-Assisted Language Instruction (CALI) Research Center, innovations are continuing to advance language-learning techniques. Funded by government, business, and educational organizations, researchers have developed interactive audio/videodisc language software for languages as diverse as Korean, Hebrew, Arabic, Spanish, and German.

Creative learning applications include a Courseware Authoring Template System (CATS), programs that allow students working at the keyboard to generate Korean Hangul characters and Hebrew script, and unique uses of romanized characters. CALI-developed audio/video language-teaching software quickly processes operator input and determines the optimal response, resulting in tailored interaction for each student.



Interactive audio/video language research has shown impressive results. Recently, students using a German program more than doubled past learning rates.





Responding to the ever-increasing interest in body conditioning, researchers in BYU's biomechanics laboratories are taking advantage of modern technology to study physical performance. Analytical tools include specialized computers, force plates, and electromyographic monitors as well as high-speed film, video cameras, and digitizers for quantitative motion studies. Several recent studies have focused on the effects of systematic weight training on fingers, toes, and wrists, areas typically overlooked in traditional body-strengthening programs. Using the Digit Exerciser, a machine developed at the university, athletes have demonstrated statistically significant performance increases in vertical jumping, shot-putting, ball throwing ability, sprinting speed, acceleration, and distance running.



Training on innovative devices like the Digit Exerciser, BYU quarterback's are among those now realizing the benefits of biomechanical research.

Chemical analysis is a basic research tool, and the Center for Advanced Supercritical Fluid Separation Technologies at BYU fulfills an important role in developing and applying new analysis techniques. Recently the university attracted worldwide attention and obtained a key patent when capillary supercritical fluid chromatography was first demonstrated in its laboratories. Capitalizing on the unique properties of fluids in a supercritical state, this advanced form of chromatography separates, identifies, and quantifies various individual chemicals in complex mixtures passing through a specially prepared, hair-thin tube. Intriguing candidates for this type of analysis include such complicated and perplexing compounds as environmental pollutants, petrochemicals, and pharmaceuticals.



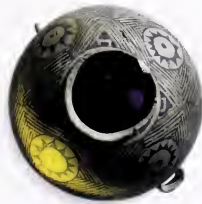
The mass spectrometer is one detection instrument used to identify individual chemical components in supercritical fluids after separation in a capillary column.





High above the canyon floors of southeastern Utah, mutely sequestered in sandstone cliffs, ancient Anasazi dwellings abound. In fact, over the last two decades BYU archaeologists have recorded more than 800 Anasazi sites in Montezuma Canyon from Monticello, Utah, southward to the border of the Navajo Reservation. Among these sites are 22 villages, one with 91 extant constructions.

Although this flourishing civilization mysteriously disappeared about 1300 A.D.—perhaps due to a severe drought and loss of groundwater—the Anasazi have bequeathed to archaeologists a wealth of cultural information in artifacts and dwellings. In addition to the Anasazi, BYU archaeological studies include Great Basin Indians, pre-Columbian civilizations of Mexico and Central and South America, Utah's Camp Floyd settlement, ancient Egypt, and Israel.



One of many well-preserved Anasazi cliff ruins, this small room might have been used for ceremonies. Phases of the moon are painted around the interior walls.

Acknowledgments

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HISTORY OF GRADUATE STUDIES

1916	Master's degree first offered	1959	First doctoral programs authorized
1919	First master's degrees awarded	1961	First doctoral degrees conferred
1929	Graduate Division becomes Graduate School with dean	1973	Institution of J. Reuben Clark Law School
		1975	Institution of Graduate School of Management

Although Brigham Young University is now a thriving center for graduate studies, with nearly 4,000 graduate students on its rolls, seventy-five years ago graduate education was merely a suggestion, a recommendation. The faculty minutes of 23 April 1912 record the first mention of graduate studies at BYU—a recommendation that “beginning with the year 1913–14 a master degree be offered.” Although this recommendation was adopted and recommended to the Board of Trustees, apparently no action was taken.

Four years later, the faculty minutes record that President George H. Brimhall submitted “the question of the advisability of offering a Master's Degree.” A committee consisting of Dean Amos Merrill, Harvey C. Fletcher, Martin P. Henderson, D. R. Brimhall, and Alice Louise Reynolds was formed in response to the president's question. The committee filed a report, and ten days later, 24 April 1916, at a subsequent faculty meeting “it was voted that the Master's Degree be offered according to the conditions stipulated by the committee.”

The committee's “conditions” were published under the general heading “Graduation” in the 1916–17 catalogue, thereby introducing the Graduate Division to the student body. Such conditions required that the master's candidate attend the university for a minimum of one year, complete 30 credit hours beyond the requirements for the bachelor's degree, pass an oral examination, present an “acceptable” thesis, and deposit a number of copies of this thesis in the university library.

Current graduate study requirements resemble these early conditions; however, the admission procedure for graduate study at BYU has become considerably more complex. According to the 1916–17 catalogue, students were admitted to graduate standing “on the presentation of evidence that they [had] secured a bachelor's degree from a standard institution.”

Once admitted, graduate students could pursue master's degrees in the following departments: Education, History and Government, Physics, Chemistry, and Biology. A student in a physics graduate program was required to take courses such as “Molecular Physics and Heat,” “Electricity and Magnetism,” and “Optics and Astrophysics.” Chemistry students enrolled in “Water Analysis,” “Electrolytical Analysis,” and “Physiological Chemistry.” And biology graduate students studied “Liverworts, Mosses, and Ferns,” “Methods in Plant Pathology,” and “Invertebrate Zoology.”

The Graduate Division conferred its first graduate degrees in 1919. Walter P. Cottam of St. George, Utah, fulfilled the requirements for a master of science degree, apparently in botany, and Edgar M. Jensen of Ephraim, Utah, earned a master of arts degree in educational administration. Both men subsequently became members of the BYU faculty.

Whether a student received a master of arts or a master of science degree was dependent not on the area of study, but on whether the candidate completed 24 credit hours in a foreign language. The master of arts recipient had fulfilled this additional requirement.

Small graduate enrollments in those years promoted a strong sense of camaraderie among graduate students. They participated together in seminar discussions, field trips, and social organizations such as the Graduate Club, which was formed in 1922. The purposes of this organization were "to foster fellowship among its members; to stimulate a desire for higher learning; to assist in finding and developing leadership in the communities; and to use every effort to encourage men and women of the intermountain region to attend the Brigham Young University." A student became a member automatically upon registration in the Graduate Division.

Under the direction of newly appointed university president Franklin S. Harris, a committee was selected to review the Graduate Division. In addition to addressing administrative details, the committee report, submitted 23 May 1922, decreed the philosophy of graduate work: "The essential aim of graduate study is to develop the power to do independent work and to encourage the spirit of research." The report also decreed the expectation that each candidate "possess a broad, general knowledge of his major subject with less detail in the case of his minor subjects."

Another committee was appointed, not to discuss the philosophy of graduate study, but to consider the matter of commencement attire. This committee, consisting of Alice Louise Reynolds, E. H. Eastman, and Christen Jensen, was to design the master's and doctoral hoods to be worn at graduation ceremonies at BYU. The recommended design was accepted, and in the spring of 1923 seven people, after paying a \$10 graduation fee, donned the new ceremonial hoods to receive their master's degrees.

The Graduate Division underwent not only a fashion change, but also a name change. On 22 April 1929, "it was decided to change the name of the Graduate Division to the Graduate School." The "new" Graduate School was directed by its first dean, Christen Jensen. Professor Jensen, administering as dean for twenty years, conferred many graduate degrees, including a master of arts degree in literature upon his wife, Juliaetta Bateman Jensen.

Changes in the nation's economic and political climate affected graduate work at BYU in sometimes unexpected ways. For example, the depression following the collapse of the stock market in 1929 stimulated rather than deterred the growth of graduate programs, presumably because jobs were scarce and funds for study were available through various recovery programs. During that period students wrote master's theses on such subjects as "A Morphological and Systematic Study of Utah Asilidae (Diptera)" and "Friendship as a Theme in Elizabethan Literature." Although stimulated by national economic troubles, graduate study was brought to a virtual standstill by the advent of World War II. Only five degrees were conferred in 1943, and only four each in 1945 and 1946. By 1949, however, the effects of the G.I. Bill were being felt, and fifty-four candidates were awarded graduate degrees.

It was planned that BYU would begin offering work toward doctoral degrees as early as 1945–46, but in fact final authorization did not come until 1959, for programs in bacteriology, botany, and zoology. By 1966 doctoral degrees were being offered in engineering, religious education, French, German, Spanish, and dramatic arts. Although the first earned doctoral degrees were not awarded until 1961, at least one "doctorate" was conferred prior to that. In 1912, at the suggestion of the General Church Board of Education, an honorary doctorate in literature was awarded to Emmeline B. Wells of Salt Lake City. She was the editor of the *Woman's Exponent* and president of the Relief Society organization.

Through the years truly great teachers and researchers like Thomas L. Martin, who shepherded a one-term bacteriology course into a full-fledged doctoral program, brought maturity to graduate education at BYU. He and others like him came to BYU at great sacrifice to lay the groundwork for what today have become distinguished graduate programs conducted in superb facilities.

UNIVERSITY LIBRARY

University Librarian: Sterling J. Albrecht, 3080 HBLL, 378-2905
Associate University Librarian: A. Dean Larsen, 3080 HBLL, 378-4304
Assistant University Librarian: K. Paul Jordan, 6210 HBLL, 378-6761
Assistant University Librarian: Randy J. Olsen, 3080 HBLL, 378-2908
Assistant University Librarian: Larry J. Ostler, 3080 HBLL, 378-6724

Housing more than two million volumes including an extensive collection of pamphlets, journals, current serials, newspapers, microform titles, and nonprint materials, the Harold B. Lee Library is a major resource for graduate student research. It is a depository for United States, United Nations, Mexican, and Canadian government documents and regularly receives publications of state and local governments. Some of the library's strengths include special research collections in music in the areas of film, radio, viola, and harp. Notable collections have also been established in early modern European history, Renaissance Reformation history, American Church history, western Americana, Mormon Americana, nineteenth-century British literature, and the history of astronomy. In addition to the volumes found in open stacks, most of the special collections are located on the fourth of the library's five levels. The Archives and Manuscripts Division is on the fifth level (Dennis Rowley, 378-6372).

Interlibrary Loan services (Kathleen Hansen, 3230 HBLL, 378-3437) allow students to borrow books from other institutions. Photocopies of journal articles may be obtained for photocopying costs. A RUSH telefacsimile service is also available.

BYU participates in several cooperative programs that allow students and faculty to use materials housed in other state institutions and major research libraries throughout the United States:

1. Through the **Utah College Library Council** arrangements have been made that allow students with valid BYU ID cards to borrow materials from other college and university libraries in the state.
2. The **Research Libraries Group** is a national consortium of more than twenty major research libraries that work together to improve access to library resources necessary in scholarly research. The benefits of membership in this group include priority treatment of interlibrary loan requests from many major U.S. libraries (e.g., Yale, Princeton, Stanford, University of Michigan) and the availability of some materials that normally do not circulate. This group also sponsors a computerized shared-cataloguing system that provides access to the computerized portion of the card catalogues of member libraries. Inquiries are handled at the reference desk on the main floor (level 3, 378-2927).
3. The **Center for Research Libraries** is an organization whose objective is to increase the availability of research materials to its more than 180 member institutions. Through this organization, many infrequently used materials are deposited in a common pool from which all members may borrow. BYU students may borrow from the center's collection of archives, dissertations, government documents, journals, monographs, and newspapers. Inquiries are handled at the Interlibrary Loan Office.
4. BYU's **Computer-assisted Research Services**, through access to more than 200 computerized data bases, provide bibliographic references on a given topic. There is a charge for computer connect time, but not for consultation services. Inquiries are handled in 3228 HBLL, 378-5627.

University Library

The library also provides a number of special services for graduate students. For example, some study carrels are available by assignment to graduate students (doctoral students have priority). Furthermore, graduate students may check out circulating books for eight weeks rather than two (the undergraduate limit). There are also research personnel in the library, in addition to reference desk staff, who will work individually and in depth with graduate students on their research projects and theses.

The facilities of other libraries operated by The Church of Jesus Christ of Latter-day Saints are also available to Brigham Young University students. The Family History Library in Salt Lake City contains approximately 100,000 books and more than 800,000 rolls of microfilm. A regional family history library, operating under the general direction of the Church Family History Department, is located on the fourth level of the Harold B. Lee Library. Facilities of the library of the Church Historical Department are available by arrangement to advanced students for research. This facility is in the LDS Church Office Building in Salt Lake City.

UNIVERSITY GRADUATE STUDIES CALENDAR

FALL SEMESTER 1988

February 27	Last day international applicants may submit completed applications for admission for fall semester
March 1	Financial aid priority deadline for Guaranteed Student Loans and BYU loans
June 15	Last day U.S. applicants may submit completed applications for admission for fall semester
July 1	Last day to apply for BYU short-term loans from Financial Aid Office to pay fall semester tuition by the mail-in deadline
August 15	Tuition mail-in deadline for fall semester
22, 23, 24	Annual University Conference
25, 26, 27	Orientation
29	Classes begin
29	In-person late registration for students who did not use the advance registration system
September 5	Labor Day holiday
12	Last day to late register or add classes. Classes dropped after this date will appear with W, official withdrawal, on the transcript
16	Last day graduate students may apply for December 1988 graduation (graduation fee must be paid)
October 3	Last day to officially withdraw from the university without being graded
November 18	Last day students in dissertation, thesis, or selected project programs may schedule final oral examination (defense of their work) and submit one copy of their work to the Reserve Library
24, 25	Thanksgiving Day holiday
December 2	Last day students in dissertation, thesis, or selected project programs may have a final oral examination (defense of their work)
7	Last day of class instruction
8, 9, 10	Reading days
9	Last day graduate students may submit final copies of a dissertation, thesis, or selected project to the library for binding
12, 13, 14, 15, 16	Final examinations
19	Last day graduate students may complete remaining requirements for a degree, pay fees, and submit examination results (oral or written) and grade changes for I's, T's, etc., to the Office of Graduate Studies
19	December graduation (no commencement exercises)

WINTER SEMESTER 1989

June 30	Last day international applicants may submit completed applications for admission for winter semester
October 15	Last day U.S. applicants may submit completed applications for admission for winter semester
November 1	Last day to apply for BYU short-term loans from Financial Aid Office to pay winter semester tuition by the mail-in deadline
December 15	Tuition mail-in deadline for winter semester
January 6	Orientation
9	Classes begin
9	In-person late registration for students who did not use the advance registration system

Calendar

16	Martin Luther King, Jr., Day
23	Last day to late register or add classes. Classes dropped after this date will appear with W, official withdrawal, on the transcript
27	Last day graduate students may apply for April 1989 graduation (graduation fee must be paid)
February 13	Last day to officially withdraw from the university without being graded
20	President's Day holiday
24	Last day students in dissertation, thesis, or selected project programs may schedule final oral examination (defense of their work) and submit one copy of their work to the Reserve Library
March 10	Last day students in dissertation, thesis, or selected project programs may have a final oral examination (defense of their work)
17	Last day graduate students may submit final copies of a dissertation, thesis, or selected project to the library for binding
24	Last day graduate students may complete remaining requirements for a degree, pay fees, and submit examination results (oral or written) and grade changes for I's, T's, etc., to the Office of Graduate Studies
April 18	Last day of class instruction
19, 20, 21	Reading days
22, 24, 25,	Final examinations
26, 27	
28	Commencement

SPRING TERM 1989

October 30	Last day international applicants may submit completed applications for admission for spring term
February 20	Last day U.S. applicants may submit completed applications for admission for spring term
March 1	Last day to apply for BYU short-term loans from Financial Aid Office to pay spring term tuition by the mail-in deadline
April 14	Tuition mail-in deadline for spring term
May 2	Orientation
3	Classes begin
3	In-person late registration for students who did not use the advance registration system
10	Last day to late register or add classes. Classes dropped after this date will appear with W, official withdrawal, on the transcript
19	Last day to officially withdraw from the university without being graded
19	Last day graduate students may apply for August 1989 graduation (graduation fee must be paid)
29	Memorial Day holiday
June 21	Last day of class instruction
22	Reading day
23, 24	Final examinations

SUMMER TERM 1989

December 31	Last day international applicants may submit completed applications for admission for summer term
April 15	Last day U.S. applicants may submit completed applications for admission for summer term
May 1	Last day to apply for BYU short-term loans from Financial Aid Office to pay summer term tuition by the mail-in deadline
19	Last day graduate students may apply for August 1989 graduation (graduation fee must be paid)
June 9	Tuition mail-in deadline for summer term
23	Last day students in dissertation, thesis, or selected project programs may schedule final oral

	examination (defense of their work) and submit one copy of their work to the Reserve Library
24	Orientation
26	Classes begin
26	In-person late registration for students who did not use the advance registration system
July 3	Last day to register or add classes. Classes dropped after this date will appear with W, official withdrawal, on the transcript
4	Independence Day holiday
7	Last day students in dissertation, thesis, or selected project programs may have a final oral examination (defense of their work)
13	Last day to officially withdraw from the university without being graded
14	Last day graduate students may submit final copies of a dissertation, thesis, or selected project to the library for binding
21	Last day graduate students may complete remaining requirements for a degree, pay fees, and submit examination results (oral or written) and grade changes for I's, T's, etc., to the Office of Graduate Studies
24	Pioneer Day holiday
August 14	Last day of class instruction
15	Reading day
16, 17	Final examinations
18	Commencement

C A T A L O G U E T E R M S A N D A B B R E V I A T I O N S

The following terms and abbreviations are used throughout the catalogue.

Semester. A semester is approximately a sixteen-week block of time in which courses of study are offered and credit for their satisfactory completion is granted. BYU has two semesters each year, fall semester and winter semester. Fall semester begins in late August or early September and ends in December; winter semester begins in January and ends in April.

Terms. A term is approximately an eight-week block of time in which courses of study are offered and credit for their satisfactory completion is granted. BYU has two terms each year, spring term and summer term. Spring term begins in late April and ends in June; summer term begins in late June and ends in August.

Blocks. A block is approximately an eight-week block of time, a division of a regular semester in which courses of study are offered and credit for their satisfactory completion is granted. Each semester has two blocks, the first beginning when the semester starts, the second beginning when the first block ends. Although some 500-level courses are offered during the blocks, graduate-level courses are generally not available for block registration.

Course Numbers. This catalogue does not list courses numbered below 500. For listings of undergraduate courses, see the BYU General Catalogue. Courses numbered below 500 are undergraduate courses, courses numbered 500–599 are either graduate courses or advanced undergraduate courses, and courses numbered 600 and above (600–799) are graduate courses. Most, but not all, 500-level courses can count toward a graduate degree. Restrictions and limitations are noted in the Credit Policies section of this catalogue and also in the program requirements for each department.

Credit Hour Designations. The number that follows each course title is the number of semester hours of credit designated for the class.

Study List. A study list is the schedule of courses prepared for and by each student in consultation with his or her advisor. Graduate programs, after certain core courses have been completed, are often tailored to the interests and needs of individual students. The study list allows the student, the department, and the Office of Graduate Studies to track a student's progress toward completion of degree requirements. The study list should be filed by the end of the student's first semester in a graduate program.

Graduate Coordinator. A graduate coordinator is the faculty member designated in each department to administer the department's graduate programs and advise its graduate students. Inquiries about graduate study in any department should be directed to the graduate coordinator of that department.

Abbreviations and Symbols. The following abbreviations and symbols are used in the course listings:

Abbreviations	Designations
Arr.	Credit, class, or laboratory hours arranged through consultation with department or instructor
ea.	Credit hour designation applies to each registration
R	Designates a course that may be repeated for credit
□	Cross-referenced course—one that originates in one department but may count for credit in another
(19 __)	Date faculty member was hired

Areas of Study	Abbreviations	Areas of Study	Abbreviations
Accounting	Acc.	French	Fren.
Agricultural Economics	AgEc.	German	Germ.
Agronomy and Horticulture	AgHrt.	Greek	Greek
American Sign Language	ASL	Hebrew	Heb.
Animal Science	AnSc.	Italian	Ital.
Anthropology	Anthr.	Japanese	Japan.
Art	Art	Korean	Korea.
Biology	Biol.	Latin	Latin
Botany and Range Science	Botny., Range	Portuguese	Port.
Business Management	BusM.	Russian	Russ.
Chemical Engineering	ChEn.	Scandinavian	Scand.
Chemistry	Chem.	Spanish	Span.
Civil Engineering	CivE.	Law School	Law
Clothing and Textiles	CITx.	Library and Information	
Communications	Comms.	Sciences	LIS
Computer Science	CS	Linguistics	Ling.
Design	Des.	Teaching English as a	
Economics	Econ.	Second Language	ESL
Educational Leadership	ELDR	Managerial Economics	ManEc.
Educational Psychology	EPsy.	Mathematics	Math.
Elementary Education	EIEd.	Mechanical Engineering	MeEn.
Electrical and Computer		Microbiology	Mcbio.
Engineering	ECEn.	Music	Music
English	Engl.	Nursing	Nurs.
Family Sciences	FamSc.	Organizational Behavior	OrgB.
Food Science and		Philosophy	Phil.
Nutrition	FSN	Physical Education—Dance	PE—D
Geography	Geog.	Physical Education—Sports	PE—S
Geology	Geol.	Physical Science	PhyS.
Health Sciences	Hlth.	Physics and Astronomy	Phscs.
Health Administration	HAdm.	Psychology	Psych.
History	Hist.	Political Science	PLSc.
Home Economics	HmEc.	Public Management,	
Humanities	Hum.	Institute of	PMgt.
Classics	Clscs.	Recreation Management	RecM.
Classical Civilization	ClCv.	Religious Education	
Comparative Literature	CLit.	Ancient Scripture	RelA.
Industrial Education	IndE.	Church History and	
Information Management	IM	Doctrine	RelC.
Instructional Science	IS	Secondary Education	ScEd.
International Center,		Social Work	SocW.
David M. Kennedy.		Sociology	Soc.
International and		Statistics	Stat.
Area Studies	IAS	Technology	Tech.
Languages		Theatre and Film	ThF.
Arabic	Arab.	Youth Leadership	YthL.
Chinese	Chin.	Zoology	Zool.

Terms and Abbreviations

The following abbreviations indicate which semesters or terms a class is offered:

F	Fall semester
W	Winter semester
Sp	Spring term
Su	Summer term

Alt. sem. Course is offered alternate semesters

Alt. term Course is offered alternate terms

Alt. yr. Course is offered alternate years

Even yr. Course is offered even years

Odd yr. Course is offered odd years

On dem. Course is offered "on demand," that is, when enough students request it to justify offering it

Interdisciplinary Courses. Interdisciplinary courses are those offered through more than one department or discipline.

Roman Numerals. In each academic department entry all degree programs are listed and the requirements for each degree are specified. Roman numerals are used to group requirements, but the divisions created by their use often have no special significance.

COMPLETE LIST OF GRADUATE DEGREES OFFERED AT BYU

DEPARTMENT/FIELD	Degree	Entry Semester(s)	Application Deadlines	Entrance Exam	Score
COLLEGE OF BIOLOGY AND AGRICULTURE					
Agricultural Economics					
Agricultural Economics	M.S.	Fall, Winter	University	GRE (GEN: Q,V)	1100
Agronomy and Horticulture					
Agronomy	M.S.	All	University	GRE (GEN: Q,V,A)	Subject to review
Horticulture	M.S.	All	University	GRE (GEN: Q,V,A)	Subject to review
Animal Science					
Animal Science	M.S.	All	University	None	N/A
Botany and Range Science					
Biological Science Education	M.S.	All	University	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
Botany	M.S.	All	University	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
	Ph.D.	All	University	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
Genetics	M.S.	All	University	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
	Ph.D.	All	University	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
Range Science	M.S.	All	University	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
Wildlife and Range Resources	M.S.	All	University	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
Food Science and Nutrition					
Food Science and Nutrition	M.S.	All	University	GRE	Subject to review
Food Science	M.S.	All	University	GRE	Subject to review
Nutrition	M.S.	All	University	GRE	Subject to review
Microbiology					
Medical Technology	M.S.	All	University	GRE (GEN: Q,V,A)	1600
Microbiology	M.S.	All	University	GRE (GEN: Q,V,A)	1600
	Ph.D.	All	University	GRE (GEN: Q,V,A)	1600
Zoology					
Biological Science Education	M.S.	Fall	Mar 1	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
Entomology	M.S.	Fall	Mar 1	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
	Ph.D.	Fall	Mar 1	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
Wildlife and Range Resources	M.S.	Fall	Mar 1	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
	Ph.D.	Fall	Mar 1	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
Zoology	M.S.	Fall	Mar 1	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%
	Ph.D.	Fall	Mar 1	GRE (GEN: Q,V,A and SUBJ: Biology)	1600 50%

Graduate Degrees

DEPARTMENT/FIELD	Degree	Entry Semester(s)	Application Deadlines	Entrance Exam	Score
COLLEGE OF EDUCATION					
Educational Leadership Leadership in Curriculum and Instruction	M.Ed.	Summer	April 1	GRE (GEN: Q, V, A)	Q + V = 900; A = 500
	Ed.D.	Summer	Jan 15	GRE (GEN: Q, V, A)	Q + V = 1000; A = 500
	Ph.D.	Fall, Winter Summer	Jan 15, April 1, Sept 1	GRE (GEN: Q, V, A)	Q + V = 1100; A = 500
	Leadership in Administration	M.Ed.	April 1,	GRE (GEN: Q, V, A)	Q + V = 900; A = 500
		Ed.D.	Jan 15	GRE (GEN: Q, V, A)	Q + V = 1000; A = 500
		Ph.D.	Jan 15, April 1, Sept 1	GRE (GEN: Q, V, A)	Q + V = 1100; A = 500
Educational Psychology Clinical Audiology Counseling and Guidance Counseling and Personnel Services	M.S.	Fall	Feb 14	GRE (GEN: Q, V, A)	Subject to review
	M.S.	Fall, Summer	Feb 14	GRE (GEN: Q, V, A)	Subject to review
	Ed.D.	Fall, Summer	Feb 14	GRE (GEN: Q, V, A and SUBJ: Educ or Psych)	Subject to review
Counseling Psychology	Ph.D.	Fall, Summer	Feb 14	GRE (GEN: Q, V, A and SUBJ: Educ or Psych)	Subject to review
Educational Psychology	M.S.	Fall, Summer	Feb 14	GRE (GEN: Q, V, A)	Subject to review
	M.Ed.	Fall, Summer	Feb 14	GRE (GEN: Q, V, A)	Subject to review
	Ed.D.	Fall, Summer	Feb 14	GRE (GEN: Q, V, A and SUBJ: Educ or Psych)	Subject to review
	Ph.D.	Fall, Summer	Feb 14	GRE (GEN: Q, V, A and SUBJ: Educ or Psych)	Subject to review
Instructional Science	M.S.	Fall, Summer	University	GRE (GEN: Q, V, A)	1500
	Ph.D.	Fall, Summer	University	GRE (GEN: Q, V, A)	1650
Instructional Psychology School Psychology	Ph.D.	Fall, Summer	University	GRE (GEN: Q, V, A)	1650
	M.Ed.	Fall	Feb 14	GRE (GEN: Q, V, A and SUBJ: Educ or Psych)	Subject to review
Special Education	M.S.	Fall, Summer	Feb 14	GRE (GEN: Q, V, A)	Subject to review
Speech/Language Pathology and Audiology	M.S.	Fall	Feb 14	GRE (GEN: Q, V, A)	Subject to review
Speech/Language Pathology	M.S.	Fall	Feb 14	GRE (GEN: Q, V, A)	Subject to review
Elementary Education Teaching and Learning	M.A.	Summer	University	GRE (GEN: Q, V, A)	Subject to review
	M.Ed.	Summer	University	GRE (GEN: Q, V, A)	Subject to review
	M.A.	Summer	University	GRE (GEN: Q, V, A)	Subject to review
	M.Ed.	Summer	University	GRE (GEN: Q, V, A)	Subject to review
Reading	Ed.D.	All	University	GRE (GEN: Q, V, A and SUBJ: Education)	Subject to review
Secondary Education					
Science Education	M.S.	Fall, Summer	Mar 30	GRE (GEN: Q, V, A)	1100
COLLEGE OF ENGINEERING AND TECHNOLOGY					
Chemical Engineering Chemical Engineering	M.S.	U.S.: All Int'l.: Fall	University	U.S., Canadian: none; Int'l.: GRE (GEN: Q, V, A and SUBJ: Engineering) and TOEFL	GEN: Q = 75% SUBJ = 80% TOEFL = 575
Engineering Management Engineering	MEM	All	University	Same as for M.S.	
	Ph.D.	All	University	Same as for M.S.	

DEPARTMENT/FIELD	Degree	Entry Semester(s)	Application Deadlines	Entrance Exam	Score
Civil Engineering					
Civil Engineering	M.S.	All	University	FE (EIT) or GRE (GEN: Q, V, A and SUBJ: Engineering) Int'l. students: GRE (GEN: Q and SUBJ: Engineering) TOEFL	Pass (70%) 1650 550 75% 80% 575
Engineering Management	MEM	Fall, Spring, Summer	University	FE (EIT) or GRE (GEN: Q, V, A and SUBJ: Engineering) Int'l. students: GRE (GEN: Q and SUBJ: Engineering) and TOEFL	Pass (70%) 1650 550 75% 80% 575
Engineering	Ph.D.	All	University	FE (EIT) or GRE (GEN: Q, V, A and SUBJ: Engineering) Int'l. students: GRE (GEN: Q and SUBJ: Engineering) and TOEFL	Pass (70%) 1650 550 75% 80% 575
Electrical and Computer Engineering					
Electrical Engineering	M.S.	U.S.: All Int'l.: Fall	University	None	N/A
Engineering Management	MEM	U.S.: All Int'l.: Fall	University	None	N/A
Engineering	Ph.D.	U.S.: All Int'l.: Fall	University	None	N/A
Industrial Education					
Industrial Education	M.S.	All	University	None	N/A
Mechanical Engineering					
Mechanical Engineering	M.S.	All	University	FE (EIT) or GRE (GEN: Q, V, A and SUBJ: Engineering)	Pass (70%) 1650 550
Engineering Management	MEM	All	University	FE (EIT) or GRE (GEN: Q, V, A and SUBJ: Engineering)	Pass (70%) 1650 550
Engineering	Ph.D.	All	University	FE (EIT) or GRE (GEN: Q, V, A and SUBJ: Engineering)	Pass (70%) 1650 550
Technology					
Computer-integrated Manufacturing	M.S.	All	University	GRE (GEN: Q, V, A)	1650 575
Technology Management	MTM	Fall, Spring, Summer	University	GRE (GEN: Q, V, A) Int'l.: TOEFL	1650 575

COLLEGE OF FAMILY, HOME, AND SOCIAL SCIENCES

Anthropology					
Anthropology	M.A.	Fall, Winter	University	None	N/A
Family Sciences					
Family Sciences	M.S.	Fall	Feb 1	GRE (GEN: Q, V, A)	Subject to review
	Ph.D.	Fall	Feb 1	GRE (GEN: Q, V, A)	Subject to review
Family Studies	Ph.D.	Fall	Feb 1	GRE (GEN: Q, V, A) (encouraged but not required)	Subject to review
Marriage and Family Therapy					
	M.S.	Fall	Feb 1	GRE (GEN: Q, V, A)	Subject to review
	Ph.D.	Fall	Feb 1	GRE (GEN: Q, V, A)	Subject to review

Graduate Degrees

DEPARTMENT/FIELD	Degree	Entry Semester(s)	Application Deadlines	Entrance Exam	Score
Geography					
Cartography	M.S.	All	University	None	N/A
Geography	M.S.	All	University	None	N/A
Planning	M.S.	All	University	None	N/A
History					
History	M.A.	Fall, Summer	University	GRE (GEN: Q,V,A)	A = 550
	Ph.D.	Fall	University	GRE (GEN: Q,V,A)	A = 550
History Teaching	M.A.	Fall, Summer	University	GRE (GEN: Q,V,A)	A = 550
Home Economics					
Home Economics Education	M.S.	All	University	None	N/A
International and Area Studies	M.A.	Fall	Apr 15	GRE (GEN: Q,V)	1100
Psychology					
Clinical Psychology	Ph.D.	Fall	Jan 31	GRE (GEN: Q,V,A)	Subject to review
Experimental Psychology	M.S.	Fall	Jan 31	GRE (GEN: Q,V,A)	Subject to review
	Ph.D.	Fall	Jan 31	GRE (GEN: Q,V,A)	Subject to review
Instructional Psychology	Ph.D.	Fall	Jan 31	GRE (GEN: Q,V,A)	Subject to review
Psychology	M.S.	Fall	Jan 31	GRE (GEN: Q,V,A)	Subject to review
School Psychology	SPC	Fall	Jan 31	GRE (GEN: Q,V,A)	Subject to review
Social Psychology	Ph.D.	Fall	Jan 31	GRE (GEN: Q,V,A)	Subject to review
Social Work					
Social Work	MSW	Fall	Feb 1	Required at dept discretion	Subject to review
Sociology					
Sociology	M.S.	All	University	GRE encouraged but not required	Subject to review
Family Studies	Ph.D.	Fall	Feb 1	GRE encouraged but not required	Subject to review
Sociology	Ph.D.	All	University	GRE encouraged but not required	Subject to review

COLLEGE OF FINE ARTS AND COMMUNICATIONS

Art					
Art Education	M.A.	Fall, Winter	Mar 1, Sep 1	None	N/A
Art History	M.A.	Fall, Winter	Mar 1, Sep 1	None	N/A
Ceramics	MFA	Fall, Winter	Mar 1, Sep 1	None	N/A
Drawing	MFA	Fall, Winter	Mar 1, Sep 1	None	N/A
Painting	MFA	Fall, Winter	Mar 1, Sep 1	None	N/A
Printmaking	MFA	Fall, Winter	Mar 1, Sep 1	None	N/A
Sculpture	MFA	Fall, Winter	Mar 1, Sep 1	None	N/A
Communications					
Communications	M.A.	Fall	June 1	MAT	Subject to review
Music					
Composition	DMA	Fall, Summer	Mar 1	GRE Music Test*	Subject to review
	M.M.	Fall, Summer	Mar 1	GRE Music Test*	Subject to review
Music Education	M.A.	Fall, Summer	Mar 1	GRE Music Test*	Subject to review
	M.M.	Summer	Mar 1	GRE Music Test*	Subject to review
Music Theory	M.A.	Fall, Summer	Mar 1	GRE Music Test*	Subject to review
Musicology	M.A.	Fall, Summer	Mar 1	GRE Music Test*	Subject to review
	Ph.D.	Fall, Summer	Mar 1	GRE Music Test*	Subject to review
Pedagogy	M.M.	Fall, Summer	Mar 1	GRE Music Test*	Subject to review
Performance	M.M.	Fall, Summer	Mar 1	GRE Music Test*	Subject to review
*Applicants to music graduate programs have additional requirements outlined in the Department of Music Graduate Handbook, 5th edition.					
Theatre and Film					
Film	MFA	All	University	GRE (GEN: Q,V,A)	Subject to review
Theatre and Film	M.A.	All	University	GRE (GEN: Q,V,A)	Subject to review
	Ph.D.	All	University	GRE (GEN: Q,V,A)	Subject to review
Theatre Design and Technology	MFA	All	University	GRE (GEN: Q,V,A)	Subject to review

DEPARTMENT/FIELD	Degree	Entry Semester(s)	Application Deadlines	Entrance Exam	Score
COLLEGE OF HUMANITIES					
English					
English	M.A.	Fall	March 15	GRE (SUBJ: Literature)	Subject to review
Germanic and Slavic Languages					
German Literature	M.A.	Fall, Winter	April 1, Aug 1	Departmental	
Humanities, Classics, and Comparative Literature					
Classics	M.A.	All	University	None	N/A
Comparative Literature	M.A.	All	University	None	N/A
Humanities	M.A.	All	University	None	N/A
Language Acquisition					
Arabic	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
Chinese	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
French	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
German	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
Japanese	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
Korean	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
Portuguese	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
Russian	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
Scandinavian	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
Spanish	M.A.	Fall, Winter (prefer Fall)	University	None	N/A
Library and Information Sciences					
Library Science	MLIS	All	University	None	N/A
Linguistics and ESL					
Linguistics	M.A.	All (prefer Fall)	University	International Applicants: Departmental English Proficiency Exam	Pass
Teaching English as a Second Language					
	ESL	All (prefer Fall)	University	International Applicants: Departmental English Proficiency Exam	
	M.A.	All (prefer Fall)	University	International Applicants: Departmental English Proficiency Exam	
Spanish and Portuguese					
Portuguese Language	M.A.	All	University	None	N/A
Portuguese Literature	M.A.	All	University	None	N/A
Spanish Language	M.A.	All	University	Departmental*	N/A
Spanish Literature	M.A.	All	University	Departmental*	N/A
Spanish Teaching	M.A.	All	University	Departmental*	N/A
*Applicants may be required to have an oral interview or produce a tape to demonstrate language proficiency.					
COLLEGE OF NURSING					
Nursing					
Nursing Practitioner	M.S.	Fall, Winter	University	None	N/A
Nursing Specialist	M.S.	Fall, Winter	University	None	N/A

Graduate Degrees

DEPARTMENT/FIELD	Degree	Entry Semester(s)	Application Deadlines	Entrance Exam	Score
COLLEGE OF PHYSICAL AND MATHEMATICAL SCIENCES					
Chemistry	M.S.	Fall recommended	Earlier*	International Applicants: GRE (SUBJ: Adv. Chem.)	Subject to review
Biochemistry	Ph.D.	Fall recommended	Earlier*	International Applicants: GRE (SUBJ: Adv. Chem.)	Subject to review
Chemistry	M.S.	Fall recommended	Earlier*	International Applicants: GRE (SUBJ: Adv. Chem.)	Subject to review
	Ph.D.	Fall recommended	Earlier*	International Applicants: GRE (SUBJ: Adv. Chem.)	Subject to review
*See the department section of this catalogue for specific dates.					
Computer Science	M.S.	All	University	GRE (GEN: Q,V,A)	Subject to review
Computer Science	Ph.D.	Fall, Winter	Mar 15, Jun 15	GRE (GEN: Q,V,A and SUBJ: Comp. Sci.)	Subject to review
Geology	M.S.	Fall, Winter	Mar 15, Oct 15	GRE (GEN: Q,V,A and SUBJ: Geology)	50%
Earth Science Teaching	M.A.	Fall, Winter	See above	GRE (GEN: Q,V,A and SUBJ: Geology)	50%
Mathematics	M.A.	All	University	GRE: recommended;	Subject to review
Mathematics Education	M.A.	All	University	GRE: recommended;	Subject to review
Mathematics	M.S.	All	University	GRE: recommended;	Subject to review
	Ph.D.	All	University	GRE (GEN: Q,V,A and SUBJ: Mathematics)	Subject to review
Physics and Astronomy	M.S.	Fall	Feb 15	GRE (GEN: Q,V,A and SUBJ: Physics)	40%
Physics	Ph.D.	Fall	Feb 15	GRE (GEN: Q,V,A and SUBJ: Physics)	60% **
Physics and Astronomy	Ph.D.	Fall	Feb 15	GRE (GEN: Q,V,A and SUBJ: Physics)	60% **
**Although a student may be admitted with a score of 60%, the student must retake the examination and earn a score of 80% or higher before the end of the first year of graduate work.					
Statistics	M.S.	Fall, Winter	University	None	N/A
Statistics					
COLLEGE OF PHYSICAL EDUCATION					
Health Sciences	M.S.	All	University	GRE (GEN: Q,V,A)	Subject to review
Health Sciences	M.H.Ed.	All	University	GRE (GEN: Q,V,A)	Subject to review
	Ed.D.	All	University	GRE (GEN: Q,V,A)	Subject to review
Physical Education—Dance	Ed.D.	All	University	GRE (GEN: Q,V,A)	Subject to review
Analysis of Human Motion	M.A.	All	University	GRE (GEN: Q,V,A)	Subject to review
Dance	Ed.D.	All	University	GRE (GEN: Q,V,A)	Subject to review
Professional Leadership—Dance	Ph.D.	Fall, Summer	University	GRE (GEN: Q,V,A)	Q,V = 1000
Physical Education—Sports	Ph.D.	Fall, Summer	University	GRE (GEN: Q,V,A)	Q,V = 1000
Corrective Physical Education	M.S.	Fall, Summer	University	GRE (GEN: Q,V,A)	Q,V = 900
Exercise Physiology	M.A.	Fall, Summer	University	GRE (GEN: Q,V,A)	Q,V = 900
Exercise Science and Athletic Training	Ed.D.	Fall, Summer	University	GRE (GEN: Q,V,A)	Q,V = 1000
Physical Education					
Physical Education					

DEPARTMENT/FIELD	Degree	Entry Semester(s)	Application Deadlines	Entrance Exam	Score
Recreation Management					
Community School Leadership	M.A.	All	University	None	N/A
Recreation Management and Youth Leadership	M.A.	All	University	None	N/A
Therapeutic Recreation	M.A.	All	University	None	N/A

SCHOOL OF MANAGEMENT

Institute of Public Management and Health Administration					
Public Administration	MPA	Fall	University	GMAT	500
Managerial Economics					
Managerial Economics	M.S.	All	University	GRE (GEN: Q,V,A and SUBJ: Economics) or GMAT	Subject to review
Master of Business Administration					
Business Administration	MBA	Fall	University	GMAT	500
Organizational Behavior					
Organizational Behavior	MOB	Fall	University	GMAT or GRE	Subject to review
School of Accountancy					
Information Systems—Auditing	M.Acc.	Consult with the SOA office	Feb 20 for Fall May 30 for Winter	GMAT	500
Information Systems—Consulting	M.Acc.	Consult with the SOA office	Feb 20 for Fall May 30 for Winter	GMAT	500
Management Accounting	M.Acc.	Consult with the SOA office	Feb 20 for Fall May 30 for Winter	GMAT	500
Tax	M.Acc.	Consult with the SOA office	Feb 20 for Fall May 30 for Winter	GMAT	500



GENERAL INFORMATION

TUITION AND FEES

Cashier's Office

D-155 ASB, 378-7808

All students who register at BYU must pay the correct amount of tuition and fees (in U.S. dollars) at the time of registration. Fees are to be paid at the Cashier's Office, but questions regarding fee assessment should be addressed to Financial Services (D-208 ASB). The university reserves the right to change tuition and fees without notice.

Because students beyond the baccalaureate degree typically make a heavier demand on university resources than undergraduate students do, they are assessed at a higher tuition rate.

Full-Time and Part-Time Attendance. Full-time students pay a fixed rate of tuition; part-time students are assessed according to the number of credit hours taken.

Full-time:	8.5 or more hours in a semester
	4.5 or more hours in a term
Part-time:	Fewer than 8.5 hours in a semester
	Fewer than 4.5 hours in a term

Note: A fraction of an hour is counted as a full hour for assessing fees.

Audit Courses. The charge for auditing a course, that is, for attending class but not receiving a grade or credit, is the same as though it were taken for credit. Audited courses do not appear on the transcript.

TUITION

A significant portion of the cost of operating the university is paid from the tithes of The Church of Jesus Christ of Latter-day Saints. Therefore, students and families of students who are tithe-paying members of the Church have already made a contribution to the operation of the university. Because others will not have made this contribution, they are charged a higher rate of tuition. This practice is similar in principle to that of state universities that generally charge nonresidents at a higher rate than residents.

1988-89 Tuition Schedule

Per Semester (Fall or Winter)		Per Term (Spring or Summer)	
LDS Member	Non- Member	LDS Member	Non- Member

Advanced-standing Students (other than students in the Law School and Graduate School of Management)

Full-Time			
\$995	\$1,490	\$497	\$745
Part-Time			
\$110	\$165	\$110	\$165
per hour	per hour	per hour	per hour

Graduate School of Management and Law School Students

Full-Time			
\$1,610	\$2,415	\$805	\$1,207
Part-Time			
\$178	\$267	\$178	\$267
per hour	per hour	per hour	per hour

Tuition Refunds

If a student officially withdraws from the university or changes from full-time to part-time status, and if the student has paid tuition and fees from personal resources, the student may request a partial refund of tuition and fees. Any refund due will be paid by check, through the mail, approximately two weeks from the date on which the student officially reports discontinuance from the university and has his or her activity card voided by the Discontinuance Office (390 SWKT, 378-2767). Late fees are not refundable. Refunds will *not* be granted to students who paid tuition with a university loan, a scholarship, or a benefit. If a student withdraws or drops to part-time status and has received a federal Guaranteed Student Loan (GSL), federal regulations require the school to return a portion of any institutional refund due the student to the lending institution through which the GSL was processed.

Tuition and Fees

The amount of the refund the student receives depends on the date a student reports discontinuance to the Discontinuance Office. Tuition assessments for both full-time and part-time students carry a \$50 nonrefundable charge, and the following refund rates apply to both:

Before 1st day of classes	100% less \$50
During the 1st five days of classes	90% less \$50
During the 2nd five days of classes	80% less \$50
During the 3rd five days of classes	60% less \$50
During the 4th five days of classes	40% less \$50
During the 5th five days of classes	20% less \$50
Thereafter	None

FEES

Late Registration Fee. Full-time and part-time students who fail to complete registration by the deadlines are assessed the following nonrefundable late registration fees:

Fall or winter semester registration	\$50
Spring or summer term registration	\$25

Students whose tuition check is dishonored by the bank will be charged the \$50 or \$25 late fee in addition to the dishonored check charge.

Class Fees. Some courses require a fee in addition to tuition, to be paid upon registration. See course listings. Class fee refunds are based on the same schedule as tuition refunds.

Miscellaneous General Fees and Fines

Application fee (nonrefundable)	
New applying student	\$30
Reapplying student	\$30
Change of registration fee (for each class dropped)	
1st day of classes	Free
2nd day of classes	Free
3rd day of classes	\$3
4th day of classes	\$4
5th day of classes	\$5
6th day of classes	\$6
7th day of classes	\$7
8th day of classes	\$8
9th day of classes	\$9
10th day and thereafter	\$10
Change of grade fee	\$10
Dishonored check charge	\$7

Duplicate activity card	\$3
Financial aid fees	
BYU loan application processing	\$10
Graduation fee (nonrefundable)	
Master's degree	\$20
Doctoral degree	\$25
Graduate minimum registration fee (for graduate students using university facilities without formal registration for university classes)	LDS \$220 Non-LDS \$330
Holds placed on credits for unpaid bill	\$3
Identification photo	\$3
Physical education locker	\$4
Records search fee	\$1
Special examination fee	
Fee to take exam (nonrefundable)	\$10
Per-credit-hour charge upon successful completion of exam. (The maximum fee in any one subject shall not exceed \$40 in addition to the \$10 examination fee. Each examination will be treated independently of any other examination, and the charge will apply accordingly.)	\$5
Spouse activity card (nonrefundable) per semester	\$5
Thesis binding (four copies)	\$30
Traffic fees	
Bicycle registration (Provo City license)	\$3
Fines	Variable, according to violation
Parking permits	\$10-\$30
Transcript fee (pay at Records Office)	\$2

A D M I S S I O N S

Graduate Admissions
B-356 ASB, 378-7367

Applications for admission to most areas of graduate study are available from Graduate Admissions, B-356 ASB. The Law School and the Graduate School of Management, however, use different forms, which they furnish on request.

Deadlines for Graduate Applications

Most departments and programs require that all parts of the application be completed and received by the deadlines listed below, but some departments have earlier deadlines and will not consider late applications. The chart, "Complete List of Graduate Degrees Offered at BYU," lists the application deadlines for all graduate programs. International applicants should submit completed applications at least four months before the deadlines for their particular programs.

Entry Time	Deadlines for U.S. and Canadian Applicants	Deadlines for International Applicants
Fall (September)	June 15	February 27
Winter (January)	October 15	June 30
Spring Term (April)	February 20	October 30
Summer Term (June)	April 15	December 31

Note:

1. Application materials must be submitted to Graduate Admissions, B-356 ASB.
2. Some programs admit only once each year, and application deadlines may be earlier than those listed above. Applicants are advised to ask departments for specific dates.
3. Some programs require additional application materials such as test scores, portfolios, and entrance examinations. Applicants are advised to ask departments about specific requirements.
4. Students applying concurrently to more than one program must make separate application to each and pay a separate fee for each.

Application Requirements

Admission to graduate study is highly selective and is granted to a specific program for a specific semester or term. As a minimum, applicants who wish to be considered for admission must do the following:

U.S. Applicants

1. Submit a complete application before the application deadline. An application is not considered complete until the application fee has been paid and all transcripts, letters of recommendation, the statement of intent, and the confidential report are in, as well as parts A and D of the admissions application.
2. Agree to maintain university standards of personal conduct.
3. Have received or be about to receive a baccalaureate degree from an accredited U.S. or Canadian university. The Office of Graduate Studies must receive an official transcript showing that the degree has been conferred. Without such verification, registration will not be permitted beyond the first semester.
4. Have earned at least a 3.0 GPA in the last 60 hours of course work.
5. Satisfy departmental requirements for consideration, including national examinations (such as the GRE) specified by the department.

International Applicants (all non-U.S.)

Note: Brigham Young University will not process applications from applicants entering the United States with a B visa or with certain J visa categories. An admitted student will receive the I-20 form (Certificate of Eligibility) with the official letter of acceptance; the I-20 is used to obtain a student visa (F-1).

1. Submit a complete application before the application deadline. An application is not considered complete until the application fee has been paid and all official transcripts, official evidences of degrees earned, letters of recommendation (part C), the statement of intent, official TOEFL score, financial certification, and the confidential report (part B) are in, as well as parts A and D of the admissions application.
2. Agree to maintain university standards of personal conduct.

3. Submit evidence of having **completed** training equivalent to a U.S. baccalaureate degree at a recognized university.
4. Have earned at least a 3.0 GPA (on a 4.0 scale) for all previous undergraduate work.
5. Submit a TOEFL score of at least 550. This is required of all applicants for whom English is not the native language.
6. Submit the required financial statement to receive financial clearance. Applicants must give proof of sufficient funds to pay for schooling.
7. Satisfy departmental requirements for consideration.

Full Disclosure Requirement: All information and documents required for admission must be submitted, including transcripts from every institution attended. Incomplete information or falsification of information constitutes grounds for immediate dismissal and loss of all credit earned at BYU.

Admissions Process

U.S. Applicants: Graduate Admissions receives and checks all parts of the application for completeness. Information for the department (part D), the statement of intent, one copy of the official transcripts, and the letters of recommendation are forwarded to the department; other parts of the application are retained in the Office of Graduate Studies. When the application is complete, Graduate Admissions clears the applicant for the department's consideration and asks for the department's recommendation.

International Applicants: Graduate Admissions receives and checks all parts of the application. When the file is complete and has been cleared (TOEFL and financial), it is sent to the department for consideration and recommendation. Newly admitted international students are required to attend an orientation meeting at the beginning of fall semester. Details are available at the International Students Office (121 KMB).

Notice of Acceptance or Denial

After the admissions file has been reviewed for final acceptance by the department and the Office of Graduate Studies, the university notifies applicants of the admissions decision. **Only a letter from the Office of Graduate Studies grants official university acceptance.** International applicants receive an I-20 form with their

acceptance letter; the I-20 is used to obtain a student visa (F-1).

Nondegree-seeking Applicants

Currently, Brigham Young University gives admission priority to applicants who are seeking degrees. Nevertheless, if space is available, a limited number of U.S. applicants with a baccalaureate degree and at least a 3.0 cumulative grade point average may be permitted to enroll in day classes without pursuing a graduate degree. This is not an option for international students who are not permanent U.S. residents. Applicants denied admission to day classes fall or winter semesters may be allowed to enroll in the evening or in spring and summer terms. Applications are available from the University Admissions Office (A-153 ASB). Applicants are asked to attach a statement explaining their reasons for requesting nondegree enrollment.

REGISTRATION

B-130 ASB, 378-2824

Eligibility

Once they receive an official letter of acceptance from the Office of Graduate Studies, new graduate students are eligible to register. Continuing graduate students are eligible if they have fulfilled the minimum registration requirement (6 hours per year) in the preceding academic year.

Registration Materials

The Class Schedule, containing complete registration forms, instructions, and deadlines, is mailed to all new students with U.S. or Canadian mailing addresses. Continuing students may purchase one at the BYU Bookstore. Class Schedules are not mailed to addresses outside the U.S. or Canada, but international students may obtain a schedule and register when they arrive on campus.

Registration Process

The current Class Schedule contains a complete description of the registration process. What follows is merely a brief summary of that process:

Brigham Young University allows students to register by Touch-tone telephone, by mail, or in person. The process begins when the Registration Office mails an Intent to Register Form to all eligible students. After the form and a \$50 prepayment fee have been received by the university (this prepayment counts toward tuition, but it is not required for the less crowded spring or summer term registration), students can register by phone or by mail. The university begins to accept registrations for fall semester in April, for winter semester in October, and for spring and summer terms in January. With the Touch-tone system students can register and make registration changes by phone until a few days before classes begin. Students who do not have access to a Touch-tone phone can register by mailing the Touch-tone worksheet in the Class Schedule to the Registration Office.

A Registration Confirmation Form listing classes and the tuition billing is mailed to each student who has completed registration and paid the \$50 prepayment fee. Students who fail to pay tuition by August 15 for fall semester, December 15 for winter semester, and mid-

April and mid-June for spring and summer terms lose their classes and access to the Touch-tone system. They are required to late register (see below).

Late Registration

Late registration dates, fees, and instructions are printed in the current Class Schedule. Late registration requests are processed on a first-come, first-served basis. **The university reserves the right to close late registration when student enrollment reaches the maximum authorized by the board of trustees.**

Changes in Registration

Students may add or drop classes twenty-four hours a day by Touch-tone telephones until a few days before classes begin. After the semester or term has started, however, each academic department determines how classes are added in that department. Final dates, fees, and instructions for adding and dropping classes are printed in the current Class Schedule.

Auditing Classes

U.S. students who wish to audit classes (attend but not receive credit) may add such classes on a space available basis beginning the sixth class period in a semester or the fourth class period in a term. International students may not audit classes. Audited classes do not appear on the transcript.

REGISTRATION REQUIREMENTS

First Semester

Because acceptance is granted for a specific semester, students are required to register for at least 2 hours in the semester for which acceptance has been granted, or the acceptance is forfeit. New students who do not enroll the semester or term for which they are accepted and who wish to enroll in a subsequent semester must inform the Office of Graduate Studies immediately. Acceptance in one semester or term does not guarantee acceptance in a subsequent semester or term.

Minimum Registration Requirement: U.S. Students

Semester or Term. U.S. graduate students are required to register for at least 2 credit hours during any semester or

term in which they use any university facilities, consult with faculty, or take comprehensive or oral examinations. The number of graduate credit hours for which they register must, in the judgment of the faculty advisor, accurately reflect the student's involvement in graduate study and use of university resources such as libraries, laboratories, and computer facilities. In no case will the registration be for fewer than 2 credit hours per semester.

Academic Year. To retain active status and to qualify for subsequent registration, graduate students *must register for at least 6 credit hours each school year* and receive acceptable grades (D, E, UW, NS, and I are not acceptable). Students who do not fulfill this yearly requirement are dropped from their graduate programs; they lose their graduate status and must apply for readmission if they wish to continue.

International Students

International students must register for at least 9 semester hours each fall and each winter semester. Questions concerning this requirement and others should be directed to the International Student Office (121 KMB, 378-2844).

Readmission

Former graduate students who were dropped for failure to meet the minimum registration requirement, and who wish to resume their graduate studies, must submit an Application to Resume Graduate Study (available from the Office of Graduate Studies) and pay a \$30 nonrefundable processing fee. These students should expect their previous course work to be reevaluated and their degree requirements to reflect current expectations of the program.

Financial Aid Registration Requirements

It is the student's responsibility to comply with any registration requirements established by sponsoring agents for student loans, loan payment deferrals, assistantships, internships, scholarships, and awards.

Graduate Assistants, Interns, and Award Recipients. Graduate students receiving assistantships, awards, or internships through BYU must register for at least 2 hours per semester or for 1 hour per term. Departmental requirements may exceed these minimums, and international students must register for at least 9 semester hours each fall and winter semester.

BYU Short-Term Loans. Only degree-seeking students enrolled in day school are eligible for short-term BYU loans. Since the amount borrowed is directly applied toward the cost of tuition, no minimum level of enrollment is required.

Federal Loans (Guaranteed Student Loans and Supplemental Student Loans). To qualify for federal loans, graduate students must normally register for at least 4.5 hours each semester or 2.5 hours each term. However, the regulations require that students who have used their six-month "grace" period but wish to defer payment on a previous federal loan must be registered full-time—8.5 or more hours per semester and 4.5 or more hours per term. Independent study, audit, or workshop classes cannot be used to meet the minimum hour requirement.

Verification of Enrollment Status

Graduate students may request verification of their enrollment status as full-time or part-time students, for loans or for other purposes, from the Records Office (B-150 ASB, 378-2631). Registration for a minimum of 8.5 credit hours constitutes full-time enrollment in a semester, and 4.5 credit hours does so in a term. Registration for fewer hours constitutes part-time enrollment.

Loss of Eligibility to Register

Once enrolled, a graduate student becomes ineligible to register for subsequent semesters if:

1. The student has not fulfilled the minimum registration requirement (6 hours per year), has withdrawn from the graduate program, or has had his or her graduate degree program terminated by the department.
2. The student has not submitted a study list by the third week of the second semester after admission.
3. The Office of Graduate Studies has not received official transcripts showing that the required prerequisite degrees have been conferred.
4. The student has violated the BYU Code of Honor and is not cleared by the University Standards Office.
5. The student has failed to submit an annual Continuing Ecclesiastical Endorsement Form.

WITHDRAWAL OR DISCONTINUANCE

Withdrawal from Classes

If a student withdraws officially from a class during the first ten class days of a semester or the first six class days of a term, the permanent record will not show a registration for that class. If a student withdraws officially from a class between the eleventh and twenty-fifth class days of a semester or the seventh and fifteenth class days of a term, the record will show a **W** (Withdrawal). If a student stops attending a class any time without completing the official withdrawal process, or if an instructor fails to submit a grade, the record will show **UW** (Unofficial Withdrawal), which figures into the grade point average as an **E** (failure). The Class Schedule contains instructions for withdrawing from classes.

Withdrawal from the University

To officially withdraw from all courses (discontinue), graduate students must complete the discontinuance process described below. New graduate students who withdraw from the university also lose graduate status; continuing students do not. New students who wish to withdraw and enroll in a subsequent semester or term and continuing students who wish to withdraw should notify the Office of Graduate Studies immediately.

Discontinuance Process

1. Pick up discontinuance forms at the Discontinuance Office, 390 SWKT, 378-2767.
2. Obtain signatures from individual instructors, who indicate pass or fail status. (Students who discontinue after the fifth week of the semester, or the second week of the term, become responsible for grades earned in classes.)
3. Submit discontinuance forms and be signed out by a member of the Discontinuance Office staff.
4. Have the student activity card voided. *The student retains the voided card and photo ID if future enrollment is anticipated.*

Note: Law School students must initiate discontinuance through the office of the Law School dean.

Emergency Withdrawal

Students who leave the university under emergency conditions and subsequently do not return must still withdraw officially from the university before the discontinuance deadline. Official termination should be completed through the Discontinuance Office at the earliest possible time.

A D V I S E M E N T

Academic Sponsor

Once accepted into a graduate program, students are assigned a department sponsor who guides their first registration and individual study until an advisory committee is appointed in the *first semester*.

Advisory Committee

During the first semester, students should arrange for the appointment of an advisory committee. Master's (thesis and nonthesis) committees consist of a chairman and at least one other member; doctoral committees have a chairman and at least two other members. Departments may require additional members. One member must be from the minor department if a student declares a minor.

Although the chairman bears the main responsibility for advising and directing the student, other committee members also assist and advise the student concerning course work, degree requirements, and work on the thesis. It is also important that plans for the thesis, creative project, or dissertation be initiated as early as possible.

Study List

A study list is a carefully considered program that helps students plan the fulfillment of all degree requirements. It is essential for organized, well-ordered graduate work. The study list should be completed under the direction of the advisory committee during the student's first semester, but in no case later than the third week of the second semester. Students without study lists recorded with the Office of Graduate Studies cannot register.

Necessary changes in a student's study list or committee can be made if authorized by the advisory committee and department graduate coordinator.

Progress Reports

Three times a year (before the midpoint of fall and winter semesters and spring term) each graduate student is sent a computer-generated progress report that compares the individual study list with the courses taken and summarizes the student's progress in a program: classes completed, classes still needed, and grade point average. In addition, the progress report alerts a student to possible problems with academic status, GPA, prerequisite degrees needed, minimum registration requirements, time limits, and courses.

DEGREE REQUIREMENTS

The following minimum standards for graduate programs have been established by the university, though it is not uncommon for departments to have higher standards. Additional information about specific requirements for each graduate program appears under individual department listings in this catalogue. Furthermore, most departments publish detailed information about their program requirements which is available from department offices on request. Students should consult frequently with department graduate coordinators and advisory chairmen.

DOCTOR OF PHILOSOPHY DEGREE

Admission Requirements. An applicant seeking admission to a program leading to the doctor of philosophy degree must meet the requirements outlined in the Admissions section of this catalogue.

Course Work Requirements

1. *Credit Hours.* The minimum required for students with no master's degree is 54 semester hours beyond the baccalaureate degree; but the 54 hours may not include undergraduate (100 to 400 level) or other courses needed to fulfill prerequisite and skill requirements, or more than 18 hours of dissertation credit. Students who have earned a master's degree must complete at least 36 semester hours of additional graduate course work at BYU beyond the master's degree. So long as these restrictions are met, students may, with the approval of their advisory committee, apply up to 36 hours of a master's program toward a doctoral degree. See section titled Credit Policies for information about credits that may not apply toward a graduate degree.
2. *Minor.* To be granted a minor as part of a doctoral degree, a student must:
 - a. Obtain the approval of the department chairman of the major and the minor departments.
 - b. Select a graduate faculty member (approved by the department chairman of the minor department) to serve as an advisory committee member.
 - c. Register for and complete 12 semester hours of approved graduate credit in the minor.
 - d. Pass an oral or a written comprehensive examination in the minor field (prepared by the minor committee member).

3. *Dissertation Credit.* A student seeking a doctor of philosophy degree must register for and complete a minimum of 18 hours of dissertation credit. No more than 18 hours may count toward the 54 hours required, and the 18 hours may not be lumped together in one term or semester. See section titled Credit Policies for a discussion on this matter.
4. *Foreign Language and Skill Requirement.* At least 18–22 credit hours (may be undergraduate) or their equivalents are required. The Graduate Council has determined that only foreign languages, mathematics, computer science, and statistics meet this requirement (American Sign Language and research methods courses do not). The following options represent minimum expectations:
 - a. *Single language in depth.* Reading and speaking ability are required, usually equivalent to 22 credit hours.
 - b. *Two languages (reading ability).*
 - c. *Combination of one language and one or more skill subjects* (mathematics, computer science, or statistics).
 - d. *Single skill subject in depth* (mathematics, computer science, or statistics).

So long as these minimums are met, the foreign languages and the particular skills required (and the needed level of performance in these skills) are determined by the department and approved by the college and the Graduate Council. Specific requirements are indicated in the department listings of this catalogue. Early in their programs, students should discuss their plans for filling these requirements with their academic advisors and department graduate coordinators. Language or skill courses may not count toward graduate degree credit hour requirements.

Time Limit. A doctoral degree must be completed within eight years of the first semester of enrollment.
Note: In the College of Education the limit is six years.

Residency. Doctor of philosophy students must register for at least two consecutive 6-hour semesters on the BYU campus.

Comprehensive Examination. Students must pass a written comprehensive examination in their doctoral field under the direction of the major department. The minor department tests in the minor field. This examination is normally given when the student has completed the required course work for the doctor of philosophy degree. Departments may also require an oral portion of the comprehensive examination.

Oral Defense of Dissertation. The final oral examination (defense of the dissertation) must be scheduled with the Office of Graduate Studies *at least two weeks* in advance. Final examinations may not be held during the interim periods between semesters. All members of the BYU academic community are invited to attend the final oral examination, but only appointed members of the examining committee may question the candidate and vote on the candidate's performance.

A copy of the candidate's dissertation must be placed in the Reserve Library (3114 HBLL) at the time the oral examination is scheduled (at least two weeks in advance) so that interested faculty and students may review it before the examination.

Examination Committees. Doctoral examination committees must consist of no fewer than five voting members, at least two of whom are nonadvisory. Two "fail" votes constitute a failure of the examination. Faculty who have served on a candidate's advisory committee earlier in the program, but who have since been replaced, will be considered "nonadvisory" for purposes of the examination if so approved by the department. The chairman of the examination committee must be nonadvisory.

Decisions of the Examination Committees. The committee may vote to "pass," to "pass with qualification," to "recess," or to "fail" the student. If the decision is to pass with qualification, the committee may require minor revisions of the dissertation, strengthening of the candidate's preparation in subject matter areas, or both. When these qualifications are cleared and the orals committee chairman has submitted a written release to the Office of Graduate Studies, the student is judged to have passed the examination. If two or more examiners vote to recess, the examination is recessed. This permits the candidate to reschedule (with the department and the Office of Graduate Studies) a second and final examination. The new examination cannot be held sooner than a month after the recessed examination. In addition, the second examination must be convened with the original examination committee. If two or more examiners vote to fail, the examination is failed and the graduate degree program of the student is terminated.

DOCTOR OF EDUCATION DEGREE

Admission Requirements. In addition to the requirements included in the Admissions section of this cata-

logue, an applicant seeking admission to a doctor of education program must either be certified as a teacher or have completed 22 semester hours of approved courses. Further, an applicant must have completed two years of successful professional experience. Prospective students should consult with individual departments for specific requirements.

Course Work Requirements

1. **Credit Hours.** The minimum required for students with no master's degree is 54 semester hours beyond the baccalaureate degree; but the 54 hours may not include undergraduate (100 to 400 level) or other courses needed to fulfill prerequisite and skill requirements, or more than 18 hours of dissertation credit. Students who have earned a master's degree must complete at least 36 semester hours of additional graduate course work at BYU beyond the master's degree. So long as these restrictions are met, students may, with the approval of their advisory committee, apply up to 36 hours of a master's program toward a doctoral degree. Note: Most Ed.D. degrees require many more hours than these minimums. See section titled Credit Policies for information about credits that may not apply toward a graduate degree.
2. **Minor.** To be granted a minor as part of an education doctorate, a student must:
 - a. Obtain the approval of the department chairman of the major and the minor departments.
 - b. Select a graduate faculty member (approved by the department chairman of the minor department) to serve as an advisory committee member.
 - c. Register for and complete 12 semester hours of approved graduate credit in the minor.
 - d. Pass an oral or a written comprehensive examination in the minor field (prepared by the minor committee member).
3. **Dissertation Credit.** A student seeking a doctor of education degree must register for and complete a minimum of 12 hours of dissertation credit. No more than 12 hours may count toward the 54 hours required, and the 12 hours may not be lumped together in one term or semester. See section titled Credit Policies for a discussion on this matter.
4. **Foreign Language and Skill Requirement.** Generally no foreign language is required; however, students must demonstrate proficiency in statistics to the satisfaction of the advisory committee. Specific requirements are described in the department listings of this catalogue.

Time Limit. A doctoral degree in the College of Education must be completed within six years of the first semester enrollment. The limit is eight years for students in doctor of education programs in other colleges.

Residency. Doctor of education students must register for at least two consecutive 6-hour semesters on the BYU campus. Students in an approved program may fulfill the residency requirement by registering for three consecutive full-time summer terms.

Comprehensive Examination. Students must pass a written comprehensive examination in their doctoral field under the direction of the major department. The minor department tests in the minor field. This examination is normally given when the student has completed the required course work for the doctor of education degree. Departments may also require an oral portion of the comprehensive examination.

Oral Defense of Dissertation. The final oral examination (defense of the dissertation) must be scheduled with the Office of Graduate Studies *at least two weeks* in advance. Final examinations may not be held during the interim periods between semesters. All members of the BYU academic community are invited to attend the final oral examination, but only appointed members of the examining committee may question the candidate and vote on the candidate's performance.

A copy of the candidate's dissertation must be placed in the Reserve Library (3114 HBL) at the time the oral examination is scheduled (at least two weeks in advance) so that interested faculty and students may review it before the examination.

Examination Committees. Doctoral examination committees must consist of no fewer than five voting members, **at least two of whom are nonadvisory.** Two "fail" votes constitute a failure of the examination. Faculty who have served on a candidate's advisory committee earlier in the program, but who have since been replaced, will be considered "nonadvisory" for purposes of the examination if so approved by the department. The chairman of the examination committee must be nonadvisory.

Decisions of the Examination Committees. The committee may vote to "pass," to "pass with qualification," to "recess," or to "fail" the student. If the decision is to pass with qualification, the committee may require minor revisions of the dissertation, strengthening of the

candidate's preparation in subject matter areas, or both. When these qualifications are cleared and the orals committee chairman has submitted a written release to the Office of Graduate Studies, the student is judged to have passed the examination. If two or more examiners vote to recess, the examination is recessed. This permits the candidate to reschedule (with the department and the Office of Graduate Studies) a second and final examination. The new examination cannot be held sooner than a month after the recessed examination. In addition, the second examination must be convened with the original examination committee. If **two or more examiners** vote to fail, the examination is failed and the graduate degree program of the student is terminated.

MASTER'S DEGREE

Admission Requirements. An applicant seeking admission to a master's degree program must meet the requirements outlined in the Admissions section of this catalogue.

Course Work Requirements. Advisory committees or program advisors, appointed following admission to a graduate program, will help students prepare their courses of study. The following credit requirements must be met:

1. **Credit Hours.** A student seeking the master's degree must complete a total of at least 30 semester hours of credit (excluding prerequisite courses). See section titled *Credit Policies* for information about credits that may not apply toward a graduate degree.
2. **Minor.** To be granted a minor as part of a master's degree, a student must:
 - a. Obtain the approval of the department chairman of the major and the minor departments.
 - b. Select a graduate faculty member (approved by the department chairman of the minor department) to serve as an advisory committee member.
 - c. Register for and complete 9 semester hours of approved graduate credit in the minor.
 - d. Pass an oral or a written comprehensive examination in the minor field (prepared by the minor committee member).
3. **Thesis Credit or Project Credit.** For students in a thesis program, 6 of the required credit hours must be for thesis credit, but no more than 6 hours of thesis credit may count as part of the 30-hour minimum. Registration for thesis credit (from 1 to 6 hours per semester approved by the advisory chairman) and work on the

thesis must be concurrent. For students in a project program, 3 of the required hours must be for project credit.

Time Limit. Most serious students complete the requirements for the master's degree within three years of the first semester of enrollment. All students, however, must complete the program within five years of the first semester of enrollment.

Integrated Master's Programs. In a few approved programs, students may earn their baccalaureate and graduate degrees concurrently. Students in such "integrated programs" must pay graduate tuition for at least 20 semester hours or for two full-time semesters.

Oral Defense of Thesis or Selected Projects. The final oral examination (defense of thesis or project) must be scheduled with the Office of Graduate Studies *at least two weeks* in advance. Final examinations may not be held during the interim periods between semesters. All members of the BYU academic community are invited to attend the final oral examination, but only appointed members of the examining committee may question the candidate and vote on the candidate's performance.

A copy of the candidate's thesis or project must be placed in the Reserve Library (3114 HBLL) at the time the oral examination is scheduled (at least two weeks in advance) so that interested faculty and students may review it before the examination.

Examination Committees. Master's examination committees must consist of no fewer than three voting members, at least two of whom are nonadvisory. Two "fail" votes constitute a failure of the examination. Faculty who have served on a candidate's advisory committee earlier in the program, but who have since been replaced, will be considered "nonadvisory" for purposes of the examination if so approved by the department. The chairman of the examination committee must be nonadvisory.

Decisions of the Examination Committees. The committee may vote to "pass," to "pass with qualification," to "recess," or to "fail" the student. If the decision is to pass with qualification, the committee may require minor revisions of the thesis or project, strengthening of the candidate's preparation in subject matter areas, or both. When these qualifications are cleared and the orals committee chairman has submitted a written release to the Office of Graduate Studies, the student is judged to

have passed the examination. If two or more examiners vote to recess, the examination is recessed. This permits the candidate to reschedule (with the department and the Office of Graduate Studies) a second and final examination. The new examination cannot be held sooner than a month after the recessed examination. In addition, the second examination must be convened with the original examination committee. If two or more examiners vote to fail, the examination is failed and the graduate degree program of the student is terminated.

CREDIT POLICIES

Appropriate Credit Enrollment

Because graduate study is more rigorous than undergraduate study, a student should not register for more than 12 hours in a semester or 6 hours in a term. In many programs, even that may be too much. Furthermore, thesis and dissertation credit hours should be spread over the period during which the student is working on the thesis or dissertation. It would be inappropriate, for example, for a student to register for all 18 dissertation credit hours in one semester or term. Students should consult with their advisors in determining an appropriate and reasonable credit enrollment.

Restrictions on Credits That May Apply Toward a Graduate Degree

1. Nondegree, Senior, and Transfer Credit.

Nondegree, senior and transfer credit, singly or combined, cannot exceed 10 semester hours of a graduate degree program.

- a. *Nondegree Credit.* Credit taken after the baccalaureate degree has been received, but before the semester of formal admission to a graduate program, is defined as nondegree credit. Only with department approval can any such credit be considered as part of a graduate degree program.
- b. *Senior Credit.* In some restricted instances students seeking a master's degree may apply credit taken during the senior year at BYU toward that degree, but in no instances can this credit apply to both a baccalaureate and a graduate degree.
- c. *Transfer Credit.* Credit taken at other accredited universities in the United States or in Canada may, with department approval, count toward a graduate degree at BYU if the following conditions are met:
 1. Any course to be transferred must be clearly graduate level.
 2. The grade for any such course must be B or better (pass/fail courses are not transferable).
 3. Home study, correspondence, and extension courses are not transferable.
 4. Transfer credit in combination with nondegree and senior credit cannot total more than 10 hours.

Credit from foreign universities can be considered for transfer only if certified by special examination (see section titled Credits Certified by Special Examination below for details).

2. Other BYU Credit

Lower-division courses (100 and 200 level), home study (correspondence) courses, 300 and 400 level religion courses, and education courses numbered 514R *cannot* apply toward a graduate degree. No more than 9 semester hours of BYU undergraduate classes (300 and 400 level) may apply toward a master's degree; no undergraduate courses may apply toward a doctoral degree (except those already applied to a master's degree).

3. Credits Certified by Special Examination

In rare circumstances, and with the approval of the department and the graduate dean, some credits may be certified by special examination. For example,

- a. A student may wish to transfer normally disallowed graduate credit from a nonaccredited institution or from a foreign university.
- b. A student may wish to challenge a course on the study list that covers material already mastered.

Applications to take special examinations may be obtained from the Office of Graduate Studies. For information about special examination fees, see the section titled Tuition and Fees.

A C A D E M I C S T A N D A R D S

Grade Point Average (GPA) Requirements

Graduate students whose graduate program (study list) GPA falls below 3.0 (prerequisite and skill courses are exempted) will not be allowed to graduate and may be dismissed from their graduate programs. No D credit may apply toward a graduate degree.

Annual Reviews of Graduate Students

Departments are asked to evaluate the performance of graduate students *at least once a year*; some evaluate more frequently. Students granted provisional admission should expect a review as early as the end of the first semester.

Each department establishes its own evaluation criteria and the standards it requires of graduate students, but generally students can expect to be evaluated on their total academic performance, their fulfillment of program requirements (study list submitted, courses completed on schedule, prospectus approved by department, student advanced to candidacy), and their professional performance (including quality of teaching and research). Copies of departmental evaluation criteria are available in individual departments.

Departments rate student performance as Satisfactory, Marginal, or Unsatisfactory, indicating the reasons for a low rating, and inviting the student to respond to the evaluation or to comply with a set of stated conditions for remaining in the program.

Termination of Graduate Status

Termination of graduate status may result if a student:

1. Fails to fulfill the university's minimum registration requirement.
2. Makes a request to withdraw (with the intent to pursue a degree at another university, for personal reasons, or in response to department recommendation).
3. Receives a Marginal or Unsatisfactory rating in a periodic review by the academic department and is unable or unwilling to comply with conditions for continuance outlined by the department.
4. Fails to make what the department or the university deems to be satisfactory progress toward a graduate degree.
5. Fails the departmental comprehensive examination.

6. Fails the final oral examination (defense of dissertation, thesis, or project).
7. Violates the university's standards of conduct or Honor Code.

Appeal of Termination. A student dismissed or facing dismissal for reasons other than failure of a comprehensive examination or a final oral examination may respond to or appeal that termination or impending termination. Such responses or appeals should be directed, in writing, to the department chairman or graduate coordinator. A student who wishes to appeal further may seek an audience with the college dean or associate dean. Ultimately, a final appeal may be made to the university graduate dean who, if circumstances warrant it, may appoint a committee of disinterested faculty members to adjudicate the matter.

Student Academic Grievances

The university has an established procedure for handling student academic grievances. If consulting with the teacher or the graduate advisory chairman does not resolve a grievance, a graduate student should describe the problem to the department graduate coordinator and/or the department chairman. If difficulties persist, the student may ask the college dean and finally the graduate dean for assistance.

RECORDS

Office of Graduate Studies

B-356 ASB, 378-4091

The Office of Graduate Studies maintains all student records pertinent to graduate study at BYU, including students' original applications, approved study lists, and official transcripts received from other universities.

Records Office

B-150 ASB, 378-2631

The Records Office maintains permanent records of all academic work done at the university. The office is also responsible for issuing official transcripts of credit, which include only courses completed through BYU.

Grades

Grade point averages are computed by assigning either letter grades or numeric grades:

Letter grade values. Letter grades are based on a 4.0 scale.

A	4.0	A	3.7	B+	3.4	B	3.0
B-	2.7	C+	2.4	C	2.0	C-	1.7
D+	1.4	D	1.0	D-	0.7		
E, UW, I, IE, WE	0.0						

Meaning of the Grades

A	Excellent mastery of subject
B	Good mastery of subject
C	Unimpressive mastery of subject
D	Borderline understanding of subject
E	Little or no understanding of subject
W	Official withdrawal; no grade
WE	Withdrawal with failing grade
UW	Unofficial withdrawal; failing grade
P	Passing grade; no effect on GPA
I	Incomplete; same effect on GPA as an E*
T	Work in progress; no effect on GPA**
NS	Grade not submitted; same effect on GPA as an E

* The letter grade **I** (Incomplete) is given only when students who are eligible for an Incomplete contract with the instructor to complete the work in a prescribed time period. An Incomplete is never given when a student is failing or has failed a course; it is given only when extenuating circumstances (serious illness, personal injury, death in the immediate family, etc.) occur after the *twelfth week* of a semester or the *sixth week* of a term. If such extenuating circumstances arise earlier in a semester or

term, the student should petition through the Registration Office to withdraw officially from class(es). The instructor must prepare and sign the Incomplete Grade Contract and the student must pay the required fee before the Official Grade Roll is submitted at the end of the semester. A copy of the Incomplete Grade Contract must be attached to the grade roll; if it is not, the grade will be changed to an E.

The instructor indicates on the contract a specific period of time (one year maximum) in which the student must finish the uncompleted work. Students may not reregister or attend class in a subsequent semester to make up an Incomplete. However, for some kinds of courses, such as those involving laboratory work, attendance may be required for work sections missed. Once the required work has been done, the instructor completes the instructor's part of the Incomplete Grade Contract, indicating the grade earned, and submits the form to the Records Office.

An Incomplete is computed in the grade point average as a failing grade until the course work is completed and the instructor submits an official grade.

** A grade of **T**, which indicates course work in progress, is used only for certain approved courses in which work may extend beyond the semester—usually thesis and dissertation courses. The **T** grade may be changed to A, B, C, D, E, or P, depending on the grade rule for the course, when the work is completed.

Numeric grade values. The Law School and the Master of Business Administration Program grade on the numeric system:

80 and above	Superior
75–79	Above average
71–74	High pass
66–70	Passing
59–65	Marginal
58 and below	Unsatisfactory

Changes to Grades. Once recorded in the Records Office, no final grade may be changed except to correct a calculation error. When such a correction is necessary, the faculty member completes a Grade Change Authorization Form and files it with the department and the Records Office.

Repeating Classes. Some graduate programs do not allow students to repeat required graduate courses. Those that do are governed by the following policies:

1. Brigham Young University courses may be repeated unless such courses carry an R suffix (see discussion of R suffix below).
2. Courses taken at another university may be repeated at Brigham Young University, but the appropriate BYU department chairman must supply a statement of equivalency.
3. Courses taken at another institution may be repeated there and the credit transferred to Brigham Young University. Students wishing to transfer credit to BYU should consult the section of this catalogue describing credit policies because not all transfer courses may count toward a graduate degree.

Note: A course repeated at an institution other than the one at which it was taken originally, and other than at BYU, will not be counted as a repeated course.

When a class is repeated, only the last grade earned counts; the grade point average is computed using the grade and credit hours earned the last time the repeated class was taken.

"R" courses are treated differently. Since an R course is one that may be repeated for credit, it is assumed that the subject matter varies from semester to semester in such a course. Therefore, when an R course is repeated, both grades count; the grade point average is computed using the grades and credit of both classes.

Grade Reports. Grade reports are available at no charge to students a few weeks after each semester or term ends. Grade reports will be mailed to students who leave addressed, stamped envelopes containing their Social Security number at the Records Office.

Transcript Record Holds

A hold is placed on the record of a student who fails to meet university obligations (fees outstanding, university standards violations, traffic tickets, library fines, etc.). No copy of the transcript or information pertaining to it will be released until the obligation is fulfilled.

Confidentiality of Records Policy

The policy of Brigham Young University concerning confidentiality of student academic records reflects a reasonable balance between the obligation of the university for the instruction and welfare of the student and the university's responsibility to society. The university makes every effort to maintain student academic records in confidence by withholding information from individu-

als who are not authorized to receive it. Faculty and administrative officers who have a legitimate need to use students' records will be allowed access to such records as needed without prior permission from the student. The Confidentiality of Records Policy is detailed in the University Policy Handbook and the BYU General Catalogue.

Exception to University Policy— Records or Registration

A committee has been established to assist students who encounter situations that fall outside the realm of normal university policy or procedure regarding records or registration. If a student believes that his or her academic record contains an error, the student may petition for a change in that record. The petition process must be initiated within *one* year from the semester or the term in question. It is the student's responsibility to obtain the necessary supporting information from the appropriate instructor, physician, employer, or other person to accompany the request. Petition forms may be obtained in the Records Office.

FINANCIAL ASSISTANCE

Graduate Awards

BYU offers four types of graduate awards, all through individual departments—assistantships, internships, private scholarships, and supplementary awards. Because teaching and research are vital components of graduate programs, most graduate awards given by Brigham Young University are in the form of teaching and research assistantships and internships. Supplementary awards are grants that may be used only for the payment of fees.

Application. New students may apply for graduate awards as part of the regular admission process. Continuing students can obtain information and applications from their departments.

Requirements and Selection. To be eligible for assistantships, internships, or supplementary awards, students must be degree-seeking graduate students in good standing who are registered for at least 2 credit hours in the semester (or 1 credit hour in the term) for which the award is granted. The awards are competitive and generally go to students whose academic performance indicates real merit. All selections are made by academic departments.

Student Loans

Ford L. Stevenson, Director of Student Financial Aid
A-41 ASB, 378-4104

Two types of student loans are available to graduate students who qualify—BYU need-based loans (short-term, Law School, and Graduate School of Management) and federal loans. Only degree-seeking students who are making satisfactory academic progress will be considered for loan approval.

Deadlines. Students must submit applications for any BYU need-based loans or federal loans by the following deadlines: 1 March 1988 for fall 1988; 1 November 1988 for winter 1989; 1 March 1989 for spring 1989; 1 May 1989 for summer 1989.

Notification. Letters reporting the results of loan applications are sent from the Financial Aid Office approximately ten days after the application is submitted.

BYU Need-based Loans

1. BYU Short-Term Loans

Conditions and Terms. Since institutional resources for student loans are limited, recipients of federal student grants or loans are normally not eligible for a short-term BYU loan. In any event, the maximum loan cannot exceed tuition costs for a semester or a term. These loans require a financially responsible cosigner.

Loan Repayment. Although no interest is charged if loan payments are made as agreed, each loan application requires a \$10 processing fee. Loans are to be repaid during the semester or term stipulated on the promissory note. The entire amount may be repaid at the end of the semester or term, or, if the student is employed at BYU, the loan may be repaid by payroll deduction during the semester or term.

Application. Applications and information about required academic qualifications, deadlines, and procedures are available in the Financial Aid Office.

2. Law School and Graduate School of Management Loans

Eligibility. Only full-time day students admitted to either the Law School or the Graduate School of Management (GSM) are eligible to apply for these loans. Because Law School and GSM loan funds are limited, students must first apply for federal student loans. Students seeking both a federal loan and a BYU need-based GSM or Law School loan need special approval from the BYU Financial Aid Committee. International students may be eligible but also need Financial Aid Committee approval.

Conditions or Terms. Students may borrow up to \$4,000 each year to a total of \$8,000 for GSM students and \$12,000 for Law School students. A \$10 fee is charged each time a loan is processed.

Loan Repayment. Loan payments and interest at 9 percent per year on the unpaid balance begin six months after cessation of full-time student status.

Application. Applications and information about required academic qualifications, deadlines, and procedures are available in the Financial Aid Office.

Federal Loans

1. Guaranteed Student Loans (GSL)

Purpose. Guaranteed Student Loans are low-interest, federally subsidized loans made through commercial lending institutions. With certain restrictions, they are available to degree-seeking graduate students in good standing who meet government requirements for need as calculated by the ACT Family Financial Statement Need Analysis.

Restrictions. International students are not eligible.

Conditions and Terms. To receive GSLs, graduate students must be registered for at least 4.5 credit hours per semester (or 2.5 credit hours per term) during the entire period of the loan. However, the regulations require that students who have used their six-month "grace" period but wish to defer payment on a previous federal loan must be registered full-time—8.5 or more hours per semester and 4.5 or more hours per term. Independent study, audit, conference, or workshop classes cannot be used in meeting the minimum hour requirement.

Loan Repayments. Payments begin six months after the loan recipient ceases to be enrolled at least half-time and are spread over a five or ten-year period. The maximum annual loan is \$7,500, and the maximum cumulative total may not exceed \$54,750, including any undergraduate loans.

Application. Applications, deadlines, information about these loans, and instructions for applying are available in the Financial Aid Office.

2. Supplemental Loans for Students (SLS)

Purpose. SLS loans are education loans made through commercial lending institutions.

Restrictions. International students are not eligible.

Conditions and Terms. To receive SLS loans, graduate students must be registered for at least 4.5 credit hours per semester (or 2.5 credit hours per term) during the entire period of the loan. However, the regulations require that students who have used their six-month "grace" period but wish to defer payment on a previous federal loan must be registered full-time—8.5 or more hours per semester and 4.5 or more hours per term. SLS loans are neither need-based nor federally subsidized, but they require credit approval by the lender. Monthly

payments generally begin sixty days after the loan is disbursed. Students can receive an SLS in addition to a GSL. The maximum SLS is \$4,000 per academic year (with the combination of all financial aid, that is, grants, loans, and scholarships, not to exceed the cost of the student's education). The overall SLS limit is \$20,000.

Application. Applications, information about these loans, and instructions for applying are available in the Financial Aid Office.

Student Employment

C-40 ASB, 378-3561

Most student campus jobs other than assistantships and internships are listed in the Student Employment Office. All assistantships (teaching and research), all internships, and most other kinds of jobs typically filled by graduate students, such as grading papers for faculty members, are arranged through individual departments. The Student Employment Office does, however, list a wide variety of jobs across campus and in the Provo community that are open for either graduates or undergraduates. The Student Employment Office cannot make commitments to students before their arrival on campus.

Students who are ready to seek employment should bring proof of acceptance as a full-time student to the office. Degree-seeking graduate students must carry at least 2 credit hours; nondegree graduates must carry and maintain at least 8.5 credit hours.

Certain federal restrictions apply to students from foreign countries. Most international students are not eligible to obtain work permits until they have been in school for one semester; such students should consult with the International Student Office to determine their particular status with regard to employment.

For information on special Student Life awards, see the Student Life section of this catalogue.

GRADUATION POLICIES AND INSTRUCTIONS

All Graduate Students

Final Semester Registration. Before applying for graduation, a graduate student should have completed all course work on his or her approved study list *or* be currently registered for the remaining requirements. During the final semester, a graduate student must either register or pay an equivalent registration fee to the Office of Graduate Studies for at least 2 semester hours of credit. Audit credits do not count.

Application for Graduation. Graduate students should apply for graduation during the first month of the semester in which they plan to graduate (see deadlines). To apply for graduation, all students—in thesis or nonthesis programs—must submit a Graduation Application through their departments and pay the graduation fee (see fee schedule below) to the Cashier's Office. Applications received after the deadlines listed below will be processed for the next graduation.

After the department has completed its preliminary check and given its approval, the application is sent to the Office of Graduate Studies for a final check. Students will be notified of the results of this evaluation and informed of any problems that need attention.

Students in Thesis, Dissertation, and Selected Project Programs

Students in certain project programs must meet the same requirements as students in thesis and dissertation programs with regard to the scheduling of the final oral defense, the composition of the examination committee, and the standards and format of the major written work. The following departments offer project programs which have been selected to meet these special requirements: Agronomy and Horticulture, Industrial Education, Nursing, Physical Education, Psychology, Technology, Theatre and Film, Zoology, and the David M. Kennedy Center for International Studies.

Scheduling the Oral Defense. All students in thesis, dissertation, or the project programs listed above must schedule the final oral examination *at least two weeks* in advance. Final examinations may not be held during the interim periods between semesters.

Copy of Work Placed in Library. All members of the BYU academic community are invited to attend the final oral examination. Therefore, all students in thesis, dissertation, or selected project programs are required to place a copy of their work in the Reserve Library (3114 HBL) at the time the final oral examination is scheduled (two weeks in advance) to enable interested faculty and students to review it before the examination.

Final Copies. Ample time should be allowed for making corrections to the work after the final oral defense and before the deadline for submitting final copies to the library (December 9 for December 1988; March 17 for April 1989; and July 14 for August 1989).

Format Requirements for Theses, Dissertations, and Selected Projects

Colleges and departments, not the Office of Graduate Studies, are responsible for both the content and the format of theses, selected projects, and dissertations. These works are expected to meet the highest standards of excellence in substance and in appearance. The Graduate Council, in its review of graduate programs in the colleges, randomly selects theses, projects, and dissertations for reading and review.

Requirements regarding the number of copies to be submitted, and the format of such items as the title page, the acceptance page, and the abstract page, are stated in "Guidelines for Meeting Minimum Standards," available from either the department or the Office of Graduate Studies.

Graduation Fees

Doctoral candidates	\$25
Master's candidates	\$20
TESL certificate applicants	\$20
Educational specialists	\$20

1988–89 Graduation Deadlines

General Caution

The graduation deadlines are firm. Students submitting materials after these deadlines will be candidates for the next graduation.

Candidates for December 1988 Graduation*

Sep 16 Last day to apply for December 1988 graduation. Submit the form to the department and pay the application fee at the Cashier's Office (ID-155 ASB).

- Nov 18 Last day to schedule a final oral examination (defense of thesis, dissertation, or project) and to submit a copy of the work to the Reserve Library (3114 HBLL).
- Dec 2 Last day for a final oral examination (defense of thesis, dissertation, or selected project).
- Dec 9 Last day to submit final copies of a thesis, project, or dissertation to the library cashier's office for binding.
- Dec 19 Last day to complete any remaining requirements for a degree. Pay fees, submit examination results (oral and written), and submit grade changes for I's and T's to the Office of Graduate Studies.

*The university does not conduct commencement services for students graduating in December. Those students are invited to participate in April Commencement activities.

Candidates for April 1989 Graduation

- Jan 27 Last day to apply for April 1989 graduation. Submit the form to the department and pay the application fee at the Cashier's Office (D-155 ASB).
- Feb 24 Last day to schedule a final oral examination (defense of thesis, dissertation, or project) and to submit a copy of the work to the Reserve Library (3114 HBLL).
- Mar 10 Last day for a final oral examination (defense of thesis, dissertation, or selected project).
- Mar 17 Last day to submit final copies of a thesis, project, or dissertation to the library cashier's office for binding.
- Mar 24 Last day to complete any remaining requirements for a degree. Pay fees, submit examination results (oral and written), and submit grade changes for I's and T's to the Office of Graduate Studies.
- Apr 28 Commencement and convocation exercises. December 1988 graduates may also participate in these exercises.

Candidates for August 1989 Graduation

- May 19 Last day to apply for August 1989 graduation. Submit the form to the department and pay the application fee at the Cashier's Office (D-155 ASB).
- Jun 23 Last day to schedule a final oral examination (defense of thesis, dissertation, or project) and to submit a copy of the work to the Reserve Library (3114 HBLL).

- Jul 7 Last day for a final oral examination (defense of thesis, dissertation, or selected project).
- Jul 14 Last day to submit final copies of a thesis, project, or dissertation to the library cashier's office for binding.
- Jul 21 Last day to complete any remaining requirements for a degree. Pay fees, submit examination results (oral and written), and submit grade changes for I's and T's to the Office of Graduate Studies.
- Aug 18 Commencement and convocation exercises.

Commencement and Convocation

All candidates for graduation are encouraged to participate in the university's commencement and convocation exercises in either April or August. They should inform the Office of Graduate Studies of their plans to attend. Doctoral candidates are hooded in the general morning session; master's candidates are recognized in their respective college exercises during the afternoon.

Honor Designations

No honor designations are given upon conferment of an advanced degree. Various honor societies, however, may nominate graduate students for membership.

Diplomas and Transcripts

Diplomas are mailed to graduates from eight to twelve weeks after graduation. Receipt of the degree is recorded on the student's official transcript within one month after graduation, and a complimentary copy of the transcript is mailed with the diploma.

Letter of Completion

After a graduate student has completed all the requirements for graduation, the Office of Graduate Studies can furnish a letter of completion if the student requests it. This document certifies that the student has satisfied all the requirements for the degree and confirms that the degree will be conferred.



COLLEGE OF BIOLOGY AND AGRICULTURE

Dean: Bruce Nepht Smith, Professor, Botany, 301 WIDB

Associate Dean, Graduate Studies: Richard D. Sagers, Professor, Microbiology, 301 WIDB

Associate Dean: Laren R. Robison, Professor, Agronomy and Horticulture, 301 WIDB

The following departments are included within the College of Biology and Agriculture:

- Agricultural Economics
- Agronomy and Horticulture
- Animal Science
- Botany and Range Science
- Food Science and Nutrition
- Microbiology
- Zoology

The College of Biology and Agriculture is actively engaged in research and has several special facilities and programs of particular interest to graduate students.

RESEARCH FACILITIES

BYU Agriculture Station

Director: Max V. Wallentine, 375 WIDB

The station encompasses several sites, all of which support research in basic and applied agriculture. Station facilities include an 837-acre farm with 80 acres of orchards, crop research plots, a 400-cow dairy, a 60-head beef herd, and a 60-sow swine unit in Spanish Fork, Utah, a few miles south of Provo; the 6,200-acre BYU Skaggs Research Ranch near Malta, Idaho; and several livestock project areas in north Provo, among them the Ellsworth Meat and Livestock Center and poultry, sheep, and horse projects. At these facilities, research can be conducted on physiology/reproduction, health, and nutrition of several species, including beef and dairy cattle, sheep, horses, swine, goats, rabbits, guinea pigs, chickens, and turkeys.

Ezra Taft Benson Agriculture and Food Institute

Director: Laren R. Robison, 110 B-49

The major objective of the institute is to raise the quality of life among the people of the world through improved nutrition and enlightened agricultural practices. Emphasis is placed on teaching and training students who wish to work in foreign countries and on training people from those countries in agriculture and food science practices that can be used to make a difference in improving life. Research to improve agricultural practices, family nutrition, and appropriate technology is encouraged and funded.

M. L. Bean Life Science Museum

Director: Stanley L. Welsh, 290 MLBW

Exhibits and collections of biological specimens are housed in the M. L. Bean Life Science Museum. The exhibits include habitat studies of local as well as exotic plant and animal species and a large and valuable collection of trophies from North America, Africa, and Asia.

Tours and Educational Programs. The museum offers a broad range of educational opportunities for students from specialized graduate research in the various systematic collections housed in the museum to impromptu tours for the casual visitor. Many university classes make arrangements to utilize the extensive holdings. The museum also serves the community by providing educational opportunities for elementary and secondary schools as well as civic groups.

The Botanical Collection includes herbaria of vascular plants, mosses, liverworts, lichens, algae, and fungi from many parts of the world. The vascular plant collection includes more than 10,000 species represented by more than 325,000 herbarium sheets. The collection is made up principally of plants from western North America but includes many materials from the eastern United States, Europe, Mexico, and Australia. Acquisitions of plants from Alaska, Greenland, Siberia, and the Canadian Arctic have added significantly to the collections of Arctic plants. Lichens and mosses number about 8,000.

The herbarium includes more than 2,000 specimens from the Mediterranean region of Europe and from the Middle Eastern countries of Iran and Afghanistan. The fossil plant collections contain more than 10,000 specimens.

The Zoological Collections consist of a large series of vertebrate and invertebrate species from North America and from many foreign countries. These materials are available for study by teachers, advanced students, and visiting scientists.

The invertebrate collections include insects and their near relatives as well as other phyla of invertebrates obtained locally and from more distant places. Medically important arthropods such as fleas, lice, mites, and ticks are represented. Collections of special interest include marine shells and more than one million insects (with particular emphasis on butterflies, flies, and beetles.) Other invertebrate groups are also represented.

The vertebrate collections consist of thousands of fish, amphibian, reptile, bird, and mammal research specimens. In addition to the representative series of local species, the vertebrate collections include South and Central American birds, birds' eggs, and Hawaiian fishes. Staff members, graduate students, and friends of the university have contributed material from Mexico, South America, Africa, Taiwan, Malaya, the

South Pacific islands, and other areas throughout the world. The vertebrate collections also include big game trophy collections from Africa, India, and North America.

Electron Optics Laboratory

Director: Wilford M. Hess, A-140 CLFB

In the electron optics laboratory, all standard electron optics procedures can be accomplished. The laboratory has transmission and scanning electron microscopes equipped with X-ray microanalysis capabilities, plus accessory equipment for freeze-fracture, freeze-drying, and necessary support facilities.

USDA Forest Service Shrub Science Laboratory

Project Leader: Durrant MacArthur

Housed on the BYU campus, this laboratory supports one of the finest research programs on native shrubs in the world. Here nine Ph.D. research scientists with adjunct faculty appointments work with BYU faculty members and graduate students. Laboratories, greenhouses, and gardens on campus and around the state support studies on desert shrubs.

Dairy Products Laboratory

The Dairy Products Laboratory is available for research dealing with milk and dairy products. Research is conducted using full and pilot-scale equipment in this facility.

Sensory Laboratory

The sensory laboratory is a modern taste panel facility featuring isolation booths, positive pressure in the booth area, and controlled lighting. Preference and difference testing is conducted using consumers and trained panelists. The sensory laboratory also has facilities for descriptive analysis.

Western Dairy Foods Research Center

Under a five-year agreement, Brigham Young University is affiliated with Utah State University and Oregon State University in the Western Dairy Foods Research Center. As one of six such centers nationwide, this center is dedicated to cheese and cultured product research.

Lytle Ranch Preserve

Graduate students are able to do year-round on-site research and study of desert plants and animals at this large preserve in the moderate desert climate of southwestern Utah.

Miscellaneous Campus Facilities

On the Provo campus are greenhouses, gardens, an arboretum, a small animal vivarium, and a tissue culture room. Laboratory facilities include gas chromatography-mass spectrometers, isotope ratio mass spectrometers, transmission and scanning electron microscopes, ultra centrifuges, visible ultraviolet and infrared spectrophotometers, gas chromatographs, high-performance liquid chromatographs, infrared gas analyzers, atomic absorption spectroscopy, and many other items.

RESEARCH PROJECTS

Faculty and graduate students are currently engaged in a number of significant and interesting research projects, funded both externally and internally. Some of these are:

1. **Iron Uptake by Plants.** Because some plants have an efficient iron-transport system at the root surface that is controlled by a single gene, researchers postulate that a logical solution to the worldwide problem of iron-deficiency anemia may be to increase the iron content of certain foodstuffs.
2. **Shrub Genetics, Ecology, and Physiology.** Researchers are investigating the differences in photosynthetic and growth rate, plus water-use efficiency in various shrubs, partly to determine their value as browse for cattle and wildlife.
3. **Biochemical Ecology.** Scientists are studying the complex plant-herbivore interactions between host plants and insects such as the Western Pine Beetle and the Spruce Bud-worm. Other investigators conduct biochemical, ultrastructural, ethnobotanical, and paleobotanical studies.
4. **Photosynthetic Rate and Water-Use Efficiency in Plants.** Efforts to increase the value of plants as browse for cattle and wildlife, to assist in revegetation of disturbed lands, and to increase efficiency of food production are in progress.
5. **Plant Growth Regulators.** Research is being conducted on both basic and applied aspects of chemical plant growth regulation. The focus of the applied research is on the potential uses of plant growth retardants on horticultural crops, turf grass, and woody ornamentals. Cross-commodity projects dealing with the uses of growth regulators for propagating and controlling postharvest quality of horticultural crops are also in progress. The basic research deals with the effects of plant growth regulators on senescence, stress physiology, and photosynthesis.
6. **Forage Research.** At the agriculture station, cooperating agronomists and animal scientists are conducting studies on fertility and plant density levels, harvested dry matter levels of silages, and the influence of that matter on field yields, nutrient content, and animal production. A ten-year multidisciplinary palatable shrub production and grazing study in cooperation with the USDA Forest Shrub Laboratory is observing the culture and production parameters of exotic shrub species for potential livestock and game grazing.
7. **Economics in Agriculture.** Research is conducted on natural resources issues, dairy economics, and the structure of agriculture.
8. **Molecular Biology of Gene Expression in Mitochondria.** Projects include regulation of mitochondrial gene expression (1) in ovarian mitochondria as follicles mature, ovulate, and luteinize, and (2) in brown adipose tissue mitochondria as dietary components affect long-term regulation of thermogenesis.
9. **Virology and Molecular Biology.** Projects include study of the genome of Aleutian Disease Virus, which will include eventually sequencing the entire genome; study of the adeno-associated virus type 2, which requires a helper virus to reproduce itself; and a study of certain soil microorganisms to assess the genetic mobility of plasmids in a naturally occurring population. Additional genetic studies utilizing DNA recombination and mutagenesis techniques

are being carried out with cyanobacteria. The passage of the genetic material from these bacteria to plants may be of particular significance in agriculture since the cyanobacteria are capable of utilizing gaseous nitrogen and carrying out photosynthesis.

10. **Antiviral Drug Research.** Ribavirin and some other carboxamides are effective in blocking viral replication of many human and animal viruses, thus significantly altering the course of infections. The antiviral mechanism(s) of these drugs is being studied, utilizing a variety of RNA viruses that use widely different strategies to express their viral genomic information during their replicative cycles.
11. **Cancer Research.** A variety of human cancer cells, but not normal cells, are killed by the exposure to platelets in tissue culture. Experimentation is under way on the isolation and characterization of the platelet factors that may have therapeutic significance in cancer treatment.
12. **Vertebrate Evolution, Genetics and Distribution.** Research has focused on evolution in Sceloporine lizards in the Southwestern United States and Mexico, documented with karyological, electrophoretic, and mitochondrial DNA techniques. Studies on groups as diverse as chipmunks, rattlesnakes, and fishes are also included. Also under study are the diversity, distribution, behavior, and management of both small nongame and big-game mammals.
13. **Evolutionary Genetics and Zoogeography of Insects.** Using recombinant DNA techniques, *in situ* hybridization, and the genus *Drosophila* as a starting point, studies pursue the evolution of karyotypes and genome structure. Studies of Island Mountain Biogeography and the aquatic insect fauna of Mexico give us clues as to how faunas have moved between North and South America.
14. **Marine and Freshwater Biology.** Research is performed at both Stanford University's Hopkins Marine Station and the University of Washington's Friday Harbor Laboratories. It involves SCUBA collection of field data and also laboratory analysis of sublittoral community competition for space, as well as feeding and offensive and defensive strategies of marine populations. Examples of freshwater research include community energetics and succession in lentic ecosystems, the role of physical perturbations (e.g., avalanches) on stream community structure, the systematics and evolution of native trout, and the use of cytogenetics to identify inter-genera hybrid swarms.
15. **Sexual Differentiation of the Brain.** Various morphological, biochemical, and behavioral techniques are being used to elucidate the mechanisms regulating sexual differentiation of the brain. The mammalian brain appears to be inherently female, or at least undifferentiated. Functional and morphological characteristics of the brain that are typical of the male sex develop in response to the action of testicular hormones on the development and differentiation of the basically female brain. An understanding of the mechanisms regulating the sexual differentiation processes has profound implications for reproductive biology, animal behavior, and developmental neurobiology.
16. **The Physiology and Biochemistry of Exercise.** Researchers are examining in detail the effect of training on retention and use of glycogen and fat reserves in rats.
17. **Mineral and Trace Minerals Nutrition.** A variety of research projects are studying the importance of minerals and trace minerals in human nutrition, e.g., magnesium

intake during pregnancy, magnesium and auditory brain stem responses, and selenium and platelet aggregation.

18. **International Nutrition.** The major research interest is establishing the role of nutrition in human development. This involves identifying the constraints of adequate nutrition and the consequences of malnutrition in Third World countries. Linkages between nutrient deficiencies and physical stunting and/or delayed mental development are examined, and effective and appropriate assistance models are designed.
19. **Lipid Oxidation.** Basic food lipid research is being conducted with an emphasis on lipid oxidation. Studies include oxidative stability and sensory evaluation of fractionated food lipids and optimization of processing and storage conditions to extend the shelf life of foods.
20. **Continuous Process for Cottage Cheese.** Continuous processes have been developed for cottage cheese production, but textural problems have limited their application. Research projects funded by the Western Dairy Foods Research Center have been initiated that will help resolve this problem.
21. **Clinical Laboratory Methods.** Improved procedures for the laboratory diagnosis of defects in iron, calcium, steroid, and lipid metabolism as well as hemoglobin formation and kidney function are being researched.
22. **Biological Science Education.** The master of biological science education involves the development and field testing of laboratory activities for use by high school biology students as well as the development of student laboratory manuals, work sheets, and comprehensive teachers' guides.

STUDY FACILITIES

Departments in the college provide study areas and/or space in research laboratories for graduate students.

DEPARTMENT OF AGRICULTURAL ECONOMICS

Chairman and Graduate Coordinator: Farrell E. Jensen,
475 WIDB, 378-4056

Faculty/Specialties

Professors

Infinger, Carlton A. (1964) Ph.D., Montana State University,
1964. Agricultural Policy, Natural Resource Economics.
James, Sydney C. (1983) Ph.D., Oregon State University,
1960. Farm and Ranch Management.
Jensen, Farrell E. (1982) Ph.D., Kansas State University, 1972.
Agribusiness and Financial Economics.
Park, William Laird (1977) Ph.D., Cornell University, 1963.
Agribusiness Economics, Dairy Economics.

Associate Professors

Ellsworth, D. Delos (1975) M.S., Cornell University, 1959.
Rural Real Estate.
Pope, C. Arden, III (1984) Ph.D., Iowa State University, 1981.
Natural Resource Economics, Economic Theory.

Graduate Program and Degree Agricultural economics (M.S.)

Areas of Specialization

Agribusiness economics, resource economics, agricultural economics analysis.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS*

Agricultural Economics (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE (QV); score, 1100, subject to review.
 - C. GPA of 3.0 or above for last 60 hours of undergraduate degree.
- II. Prerequisites:
 - A. Baccalaureate degree in a related field from an accredited university.
 - B. Acc. 201, Math. 119, Stat. 221, AgEc. 240, or equivalent courses.
 - C. AgEc. 312 or Econ. 380 or equivalent course.
 - D. AgEc. 310, 323, 420, 460, Econ. 381, or equivalent course.
 - E. Econ. 386.
- III. Entry times: Fall and winter semesters.

Requirements for Degree

- I. Credit hours:
 - A. Thesis option (30): Minimum 24 course work hours including 9 elective hours, plus 6 thesis hours (AgEc. 699R). Standard university thesis format.
 - B. Course work option (36): Minimum 36 course work hours including 21 elective hours.
- II. Required courses:
 - A. Capstone courses (15 hours): AgEc. 510, 520, 523, 525, 560.

- B. Electives: Determined in consultation with faculty advisor. Econ. 386 can be taken for credit, but AgEc. 312 or Econ. 380 or 381 cannot.

III. Minor encouraged; may be selected from a number of related fields.

IV. Examination: Final oral examination.

*Obtain a copy of the Graduate Student Handbook from department office (475 WIDB).

Program and Degree Resources

Benson Institute
BYU Agriculture Station
M. L. Bean Life Science Museum
Lytle Ranch

AGRICULTURAL ECONOMICS GRADUATE COURSES

510. Market and Price Analysis. (3) F

Prerequisite: AgEc. 310, 312, or equivalent.

Economic principles, policies, and practices in the analysis of market structure and pricing, emphasizing agricultural industries.

520. Advanced Agricultural Finance. (3) W

Prerequisite: AgEc. 312, 320, Math. 119, Econ. 386, or equivalent.

Applying financial analysis and studying factors that affect the supply and demand for capital in agriculture.

523. Economics of Production and Resource Use. (3) W

Prerequisite: AgEc. 312, Math. 119, Econ. 386.

Introduces theory of welfare and production economics while stressing application and interpretation of production functions, cost functions, derived demand, risk and time considerations, and resource allocation.

525. Applied Agricultural Production Economics and Business Management. (3) F

Prerequisite: AgEc. 312, 325, Math. 119, or equivalent.

Applying economic principles for solving agricultural production problems. Optimal production organizations and operations assessed using mathematical programming. Total business plan completed.

540. (AgEc.-Econ.) Economics and Natural Resources. (3) F

Prerequisite: Econ. 380.

Economic theory applied to issues in natural resource development and use.

560. Advanced Agricultural Policy. (3) F

Prerequisite: AgEc. 312, 460, or equivalent.

Ways research methods and economic analysis can be combined to analyze agricultural policy development and application.

570R. Advanced Topics. (1-3) F, W, Sp, Su

Topics in agricultural marketing, development, management, and economic theory.

595R. Readings and Conferences. (1-3) F, W, Sp, Su

Individualized study on topics related to agricultural economics and agribusiness.

599R. Cooperative Education: Supervised Management and Training. (1-6) F, W, Sp, Su

Prerequisite: course work pertinent to proposed experience.

On-the-job experience. Improving ability to function in a particular phase of agribusiness management.

698R. Master's Project. (1-6) F, W, Sp, Su

Scholarly research or development project that demonstrates student's ability to use and to integrate economic and agribusiness concepts with real-world situations.

699R. Master's Thesis. (Arr.)

DEPARTMENT OF AGRONOMY AND HORTICULTURE

Chairman: Rodney Dwain Horrocks, 275 WIDB, 378-2760

Graduate Coordinator: Ronald H. Walser, 273 WIDB, 378-4032

Faculty/Specialties

Professors

Horrocks, Rodney Dwain (1978) Ph.D., Pennsylvania State University, 1967. Crop Physiology, Ecological Modeling.

Jeffery, Larry S. (1984) Ph.D., North Dakota State University, 1966. Weed Science.

Robison, Laren R. (1971) Ph.D., University of Minnesota, Minneapolis, 1962. Plant Genetics.

Terry, Richard Ellis (1980) Ph.D., Purdue University, Lafayette, 1976. Soil Microbiology.

Associate Professors

Davis, Tim D. (1982) Ph.D., Oregon State University, 1982. Plant Physiology, Plant Growth Regulators, Photosynthesis.

Jolley, Von Dale (1977) Ph.D., Iowa State University of Science and Technology, 1976. Iron Nutrition, Mineral Nutrition.

Nelson, Sheldon D. (1972) Ph.D., University of California, Riverside, 1971. Soil Physics, Irrigation Management.

Walser, Ronald H. (1980) Ph.D., Utah State University, 1975. Fruit Production, Pest Management, Plant Growth Regulators.

Williams, C. Frank (1971) Ph.D., Oregon State University, 1971. Plant Propagation, Turf Management.

Graduate Programs and Degrees

Agronomy (M.S.)

Horticulture (M.S.)

Areas of Specialization

Plant nutrition; crop, turf, and weed ecology, physiology, and management; physical, chemical, and microbial relationships of soils.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS*

Agronomy (M.S.)

Horticulture (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Acceptance by the departmental graduate coordinating committee.
 - C. Entrance examination: GRE general examination; score subject to review.
- II. Prerequisites:
 - A. Baccalaureate degree in agronomy or horticulture or related field.
 - B. Successful completion of the following courses:
 1. Crop science or horticulture emphasis: Plant physiology, general college chemistry, organic chemistry, college algebra, and trigonometry.
 2. Soil science emphasis: General college chemistry, qualitative and quantitative chemical analysis, organic chemistry, introductory college physics, and introduction to calculus.

Requirements for Degree

- I. Credit hours:
 - A. Thesis option (30):
 1. Minimum 24 course work hours plus 6 thesis hours (AgHr. 699R).
 2. Thesis: Completion of the thesis in standard university format or in scientific journal format.
 - B. Project option (40):
 1. Minimum 40 course work hours.
 2. Completion of a scholarly project report.
- II. Minor: Botany, chemistry, computer science, food science, geology, geography, mathematics, microbiology, physics, statistics, range science, or zoology.
- III. Examination: Final oral examination and defense of thesis or of project.

*Obtain a copy of the Graduate Student Handbook from department office (275 WIDB).

Program and Degree Resources

Benson Institute
BYU Agriculture Station
M. L. Bean Life Science Museum
Lytle Ranch
Greenhouses and Growth Chambers

AGRONOMY AND HORTICULTURE GRADUATE COURSES

511. Soil Physics. (3) W even yr.

Prerequisite: AgHr. 282, Chem. 105, Math. 113. Recommended: Phscs. 121.

Physical relationships of water, heat, and gases in soils; physical and chemical properties of clays. Mathematical modeling of physical properties and transport processes.

514. Soil Microbiology. (3) W even yr.

Prerequisite: Chem. 106, 107, or equivalent.

Ecology and role of soil microorganisms in nutrient cycling, decomposition of organic matter and waste materials, and degradation of agricultural chemicals in soil.

520. **Saline and Sodic Soils.** (3) F even yr.
Prerequisite: AgHrt. 302, 305, Chem. 105, 106, 107, Math. 110.

Physical and chemical properties of saline and sodic soils and waters—their diagnosis, reclamation, and management for crop production.

540. **Crop Physiology.** (3) F even yr.
Prerequisite: AgHrt. 151, 305, 460, Botny. 440.

Plant-soil-climatic relationships; crop management practices related to physiological processes in plants.

550. **Physiological Development of Horticultural Crops.** (3) F odd yr.

Prerequisite: AgHrt. 318 or 320 or 431 or 451; Botny. 440.

Developmental phenomena in horticultural crops, emphasizing plant growth regulators.

559. **Plant Breeding.** (2) W even yr.
Prerequisite: AgHrt. 151 or equivalent, Botny. 375.

Genetics and methods of plant breeding related to improving agronomic and horticultural crops.

560. **Soil and Plant Analysis.** (3) W
Prerequisite: AgHrt. 305 or Chem. 223.

Laboratory chemical analysis of soils and plant materials in soil and plant research.

598R. **Advanced Topics.** (1–2) F, W, Sp, Su
Prerequisite: consent of instructor.

Advanced study of selected agricultural topics.

605. **Soil-Plant Relationships.** (3) F odd yr.
Prerequisite: AgHrt. 282, 305; Botny. 440; organic or biochemistry course.

Soil-plant nutrition including mechanisms of nutrient uptake, transfer and assimilation, mechanisms of nutrient immobilization, and toxicity in soils and plants.

694R. **Seminar.** (1) F, W

697R. **Research.** (1–9) F, W, Sp, Su

698R. **Master's Project.** (1–6) F, W, Sp, Su
For project option only.

699R. **Master's Thesis.** (1–9) F, W, Sp, Su

DEPARTMENT OF ANIMAL SCIENCE

Chairman: Max V. Wallentine, 375 WIDB, 378-4294
Graduate Coordinator: James N. Wiltbank, 365 WIDB, 378-2397

Faculty/Specialties

Professors

Hoopes, Keith H. (1957) DVM, Washington State University, 1956. Reproductive Physiology, Surgery.

Johnston, N. Paul (1971) Ph.D., Oregon State University, 1971. Nutrition, Poultry and Small Animal Reproduction and Management.

Kellems, Richard O. (1986) Ph.D., Oregon State University, 1976. Nutrition, Dairy Production.

Orme, Leon E. (1969) Ph.D., Michigan State University, 1958. Growth and Body Composition, Livestock Evaluation and Selection.

Park, Robert L. (1965) Ph.D., Cornell University, 1962. Animal Breeding and Genetics, Swine and Livestock Production. Shupe, Merrill G. (1980) DVM, Washington State University, 1956. Anatomy, Physiology, Surgery, Animal Health.

Wallentine, Max V. (1962) Ph.D., Cornell University, 1960. Meat Science, Sheep and Livestock Production.

Wiltbank, James N. (1981) Ph.D., University of Wisconsin, Madison, 1955. Reproductive Physiology, Beef Production.

Graduate Program and Degree

Animal Science (M.S.)

Areas of Specialization

Nutrition, physiology, reproduction, livestock management, meat science, and animal breeding/genetics. Species: beef cattle, dairy cattle, poultry, goats, rabbits, sheep, and swine.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS*

Animal Science (M.S.)

Admission and Entry

- I. Application requirements: University deadlines apply.
- II. Prerequisite: Baccalaureate degree in animal science or in a closely related field.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis or project hours (AnSc. 699R or 698R).
- II. Required courses: Stat. 501, AnSc. 507, 510 or 574; 692R (each semester of residence); Zool. 503, 504.
- III. Minor. Agribusiness, agronomy, horticulture, botany, chemistry, computer science, food science and nutrition, microbiology, statistics, or zoology.
- IV. Thesis: Standard university thesis format or journal publication format.
- V. Examination. Oral defense of thesis or project.

*Obtain a copy of the Graduate Student Handbook from department office (375 WIDB).

Program and Degree Resources

Benson Institute
BYU Agriculture Station
M. L. Bean Life Science Museum
Skaggs Research Ranch

ANIMAL SCIENCE GRADUATE COURSES

507. **Advanced Animal Nutrition.** (4) W
Prerequisite: AnSc. 207; Chem. 152 or equivalent. Recommended: Chem. 181.

Functions of nutrients in metabolism, measuring feed values, assessing nutrient requirements.

510. **Advanced Reproductive Physiology.** (4) W
Prerequisite: AnSc. 310.

Endocrinology and techniques for research and for improvement of livestock reproduction.

574. (AnSc.-Botny.) **Introduction to Population Genetics.** (3) F

Prerequisite: introductory course in genetics and in statistics.

Quantitative study of factors influencing changes in gene frequencies in natural and domestic animal and plant populations.

591R. **Selected Topics in Animal Science.** (0.5–3) F, W, Sp, Su

Prerequisite: consent of instructor.

595R. **Special Problems in Animal Science.** (0.5–2) F, W, Sp, Su

Prerequisite: consent of instructor.

599R. **Cooperative Education.** (2–9) F, W, Sp, Su

Prerequisite: approval from department cooperative education coordinator.

On-the-job experience in livestock or meat production practices, veterinary medicine, or research. On or off-campus opportunities.

692R. **Seminar.** (1) F, W

698R. **Master's Project.** (1–9) F, W, Sp, Su

699R. **Master's Thesis.** (1–9) F, W, Sp, Su

DEPARTMENT OF BOTANY AND RANGE SCIENCE

Chairman: Wilford M. Hess, 401 WIDB, 378-2582

Graduate Coordinator: Rex G. Cates, 495 WIDB, 378-4281

Faculty/Specialties

Professors

Andersen, William R. (1966) Ph.D., University of California, Davis, 1963. Plant Physiological Genetics.

Brotherson, Jack D. (1969) Ph.D., Iowa State University of Science and Technology, 1969. Ecology, Range Management.

Cates, Rex G. (1985) Ph.D., University of Washington, 1971. Plant/Herbivore Interactions, Ecological Chemistry, Ecosystem Processes.

Flinders, Jerran T. (1976) Ph.D., Colorado State University, 1971. Wildlife Behavior and Wildlife Habitat.

Harper, Kimball T. (1973) Ph.D., University of Wisconsin, Madison, 1963. Community Ecology, Plant Reproductive Biology.

Hess, Wilford M. (1962) Ph.D., Oregon State University, 1962. Electron Optics, Plant Pathology.

Rushforth, Samuel R. (1970) Ph.D., Brigham Young University, 1970. Algology (especially diatoms), Evolutionary Morphology.

Smith, Bruce N., Dean (1974) Ph.D., University of Washington, 1964. Plant Physiology, Photosynthesis, Growth.

Tidwell, William D. (1966) Ph.D., Michigan State University, 1966. Paleobotany, Anatomy and Morphology.

Valentine, John F. (1968) Ph.D., Texas A&M University, College Station, 1959. Grazing Management, Ranch Management and Development.

Weber, Darrell Jack (1969) Ph.D., University of California, Davis, 1963. Plant Biochemistry and Pathology.

Welsh, Stanley L. (1960) Ph.D., Iowa State University of Science and Technology, 1960. Plant Systematics.

Associate Professors

Cox, Paul Alan (1983) Ph.D., Harvard University, 1981. Plant Evolutionary Ecology, Tropical Ecology, Ethnobotany.

Whisenant, Steven G. (1982) Ph.D., Texas A&M University, 1982. Range Management, Fire Ecology, Range Improvements.

Whitton, Leslie (1962) Ph.D., Cornell University, 1964. Horticulture, Cytogenetics.

Assistant Professor

St. Clair, Larry Lee (1976) Ph.D., University of Colorado, 1984. Lichen Ecology.

Electron Microscopist

Allen, James V. (1969) M.S., Brigham Young University, 1968.

Graduate Programs and Degrees

Biological Science Education (M.S.)

Botany (M.S.)

Genetics (M.S.)

Range Science (M.S.)

Wildlife and Range Resources (M.S.)

Botany (Ph.D.)

Genetics (Ph.D.)

Wildlife and Range Resources (Ph.D.)

Areas of Specialization

See faculty specialties.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS*

Biological Science Education (M.S.)

Botany (M.S.)

Genetics (M.S.)

Range Science (M.S.)

Wildlife and Range Resources (M.S.)

Admission and Entry

I. Application requirements:

A. Deadlines: University deadlines apply.

B. Entrance examinations:

1. General GRE and advanced biology subject test; score of 1600 on general test and 50% on subject test.

2. Oral diagnostic examination.

II. Prerequisites:

A. Baccalaureate degree in botany or equivalent; for Biological Science Education, Botany, or Genetics program applicants.

B. Baccalaureate degree, for Range Science or Wildlife and Range Resources Program applicants.

Requirements for Degree

I. Credit hours (30): Minimum 24 approved course work hours plus 6 thesis hours (Botny. 699R or Range 699R).

II. Required course: Botny. 691R or Range 699R (each semester of residence).

III. Thesis: Standard university thesis format or journal publication format.

IV. Examinations:

A. Oral examination on course work.

B. Oral defense of thesis.

Botany (Ph.D.)
Genetics (Ph.D.)
Wildlife and Range Resources (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examinations:
 1. General GRE and advanced biology subject test; score of 1600 on general test and 50% on subject test.
 2. Oral diagnostic examination.
- II. Prerequisite: Master's degree in field or equivalent.

Requirements for Degree

- I. Credit hours (54): Minimum 36 hours course work plus 18 hours of dissertation (Botny: 799R or Range 799R).
- II. Required course: Botny: 691R or Range 691R (each semester of residence).
- III. Skill requirement: Includes 21 hours in skill subject area of foreign languages, mathematics, statistics, and/or computer science. Consult graduate coordinator for details.
- IV. Dissertation: Standard university dissertation format or journal publication format.
- V. Examinations.
 - A. Comprehensive written and oral examinations on completion of skill requirement and course work.
 - B. Oral defense of dissertation.

*All degree options: Obtain a copy of the Graduate Student Handbook from department office (401 WIDB).

Program and Degree Resources

Benson Institute
BYU Agriculture Station
Electron Optics Laboratory
Greenhouses and Growth Chambers
Harrison Arboretum
M. L. Bean Life Science Museum
Lytle Ranch
USFS Shrub Sciences Laboratory

BOTANY GRADUATE COURSES

510. **Advanced Taxonomy.** (3) F alt. yr.

Prerequisite: Botny: 210 or consent of instructor.

Review of taxonomic literature and of research methods. One three-day field trip arranged.

515. **(Botny.-Range) Agrostology: Taxonomy and Ecology of Grasses.** (3) Sp even yr.

Prerequisite: Botny: 210.

Classification and ecology of grasses, emphasizing important forage species.

520. **Ethnobotany.** (3) W

Prerequisite: Botny: 120.

The use of plants by diverse human cultures. Integration of current anthropological and botanical literature, emphasizing ethnotaxonomies, survival strategies, and ethnomedicine.

521. **Ethnobotany Practicum.** (1-5) On dem.

Prerequisite: Botny: 520.

Ethnobotanical research. May require field trip outside continental U.S. Emphasizes participant observation, interviewing techniques, documentary video and film, botanical collecting techniques, and chemical extraction.

522. **Biological Instrumentation.** (2) W even yr.

Prerequisite: graduate status or consent of instructor.

Theory and application of research instruments to biological problems.

523. **Biological Instrumentation Laboratory.** (2) W even yr.

Prerequisite: Botny: 522 or concurrent registration.

Operating research instruments.

526. **(Botny.-Zool.) Cell Biology.** (3) F on dem.

Prerequisite: introductory course in biochemistry.

Molecular physiology and ultrastructure of cells, emphasizing eukaryotic organisms.

527. **(Botny.-Range) Wildland Shrubs.** (3) Sp even yr.

Taxonomy and ecology of wildland shrubs. Field trip required.

531R. **Electron Optics.** (2) TEM: F; SEM: W

Prerequisite: consent of instructor

Theoretical and practical electron microscopy of biological material. Essentially individual instruction for Transmission Electron Microscopy (TEM) or Scanning Electron Microscopy (SEM).

533. **Algology.** (3) W on dem.

Detailed study of algae, including classification and morphology

534. **Lichenology.** (3) F on dem

Detailed study of lichens, including classification, morphology, and ecology. Field trip required.

535. **Advanced Mycology.** (4) F on dem.

Detailed study of taxonomy and morphology of special groups

539. **Paleobotany.** (3) on dem.

Prerequisite: Botny: 105, Geol: 103

Morphology and relationships of fossil plants.

540R. **Advanced Topics in Plant Physiology.** (3)

W on dem.

Prerequisite: Botny: 440 or consent of instructor.

550. **Plant Geography.** (3) W on dem.

Distribution of plant species and communities in the light of present and past climates.

551. **(Botny.-Range-Zool.) Quantitative Ecology.** (3) W

even yr.

Prerequisite: Botny.-Zool: 350 or equivalent, Stat: 221 or 501.

Methods of community analysis.

552. **(Botny.-Range-Zool.) Terrestrial and Rangeland**

Ecosystems. (4) F even yr.

Prerequisite: Botny.-Zool: 350 or equivalent, Stat: 221 or 501.

Biotic communities of the earth; population dynamics, reproductive, life-form, and longevity patterns; species interactions; structure, dynamics, and evolution of communities.

554. **Population Biology.** (3) W on dem.

Prerequisite: Botny: 350 or equivalent.

Analysis of populations in natural settings; theoretical and mathematical constructs of population dynamics.

574. **(Botny.-AnSc.) Introduction to Population Genetics.**

(3) F

Prerequisite: introductory course in genetics and in statistics.

Quantitative study of factors influencing changes in gene frequencies in natural and domestic animal and plant populations.

610. **Botanical Terminology and Nomenclature.** (2) W alt. yr.

Prerequisite: consent of instructor.

Botanical terminology, including the contributions of Latin and Greek words, their gender, number, and case.

630. **Angiosperm Morphology.** (4) W on dem.

Prerequisite: familiarity with taxonomy, anatomy, and physiology or biochemistry.

Structures, relationships, and evolution of flowering plants.

- 650R. **Advanced Plant Ecology.** (2) W on dem.

Current trends in ecological research and philosophy.

678. **Organic Evolution.** (3) W on dem.

Prerequisite: introductory course in genetics or consent of instructor.

- 691R. **Graduate Seminar.** (1) F, W

- 697R. **Special Problems.** (1-6) F, W, Sp, Su

- 699R. **Master's Thesis.** (1-9) F, W, Sp, Su

- 799R. **Doctoral Dissertation.**

(1-9) F, W, Sp, Su

RANGE SCIENCE GRADUATE COURSES

505. **Wildlife Law Enforcement.** (3) W

Prerequisite: Biol. 200 or equivalent.

Current and historical principles of federal and state wildlife law enforcement, case development, evidence, evaluation, human rights, and testimony.

515. **(Range-Botny.) Agrostology: Taxonomy and Ecology of Grasses.** (3) Sp even yr.

Prerequisite: Botny. 210.

Classification and ecology of grasses, emphasizing important forage species.

527. **(Range-Botny.) Wildland Shrubs.** (3) Sp even yr.

Taxonomy and ecology of wildland shrubs. Field trip required.

551. **(Range-Botny.-Zool.) Quantitative Ecology.** (3) W even yr.

Prerequisite: Range-Zool. 354 or equivalent, Stat. 221 or 501.

Methods of community analysis.

552. **(Range-Botny.-Zool.) Terrestrial and Rangeland Ecosystems.** (4) F even yr.

Prerequisite: Range-Zool. 354 or equivalent, Stat. 221 or 501.

Biotic communities of the earth; population dynamics; reproductive, life-form, and longevity patterns; species interactions; structure, dynamics, and evolution of communities.

561. **Watershed Management.** (3) F even yr.

Prerequisite: Range-Zool. 354 or equivalent.

Water-producing characteristics of forest and rangelands, emphasizing laboratory and field studies of soil and vegetation.

565. **Wildlife Behavioral Ecology.** (3) W even yr.

Prerequisite: Biol. 200 or equivalent, Range-Zool. 354 or equivalent.

Integration of the principles of ethology, sociobiology, and behavioral ecology using examples from wildlife and livestock. Behavioral sampling methods stressed. Field trip required.

- 691R. **Graduate Seminar.** (1) F, W

- 697R. **Special Problems.** (1-6) F, W, Sp, Su

Advanced study of selected range topics: fire ecology, grazing systems, wetlands and wildlife, ecology, evolutionary biology, plant herbivore interactions, and wildlife behavioral ecology.

- 699R. **Master's Thesis.** (1-9) F, W, Sp, Su

- 799R. **Doctoral Dissertation.** (1-9) F, W, Sp, Su

DEPARTMENT OF FOOD SCIENCE AND NUTRITION

Chairman: Clayton S. Huber, 2218 SFLC, 378-6670

Graduate Coordinator: Lynn V. Ogden, 2218 SFLC, 378-6038

Faculty/Specialties

Professors

Huber, Clayton S. (1976) Ph.D., Purdue University, 1968.

Food Chemistry, Food Preservation, Food Processing.

Johnson, John Hal (1969) Ph.D., Ohio State University, 1963.

Food Science, New Product Development, Shelf Life of Foods.

Rowe, Mark J. (1987) Ph.D., Brigham Young University,

1972. Molecular Biology, Mitochondrial Gene Expression.

Woolley, Bruce H. (1977) Pharm. D., University of Southern California, 1972. Pharmacology.

Associate Professors

Franz, Kay B. (1968) Ph.D., University of California, Berkeley,

1978. Human Nutrition, Mineral Absorption, Metabolism.

Hill, John M. (1971) Ph.D., Rice University, 1965.

Nutritional Biochemistry, International Nutrition.

Ogden, Lynn V. (1984) Ph.D., University of Minnesota, St.

Paul, 1973. Food Chemistry, Dairy Products, Food Processing, Sensory Analysis.

Assistant Professors

Christensen, Merrill J. (1982) Ph.D., Massachusetts Institute of

Technology, 1982. Selenium Metabolism, Molecular

Biology.

Pike, Oscar A. (1986) Ph.D., Purdue University, 1986. Food Chemistry: Lipid Oxidation.

Graduate Programs and Degrees

Food Science and Nutrition (M.S.)

Food Science (M.S.)

Nutrition (M.S.)

Areas of Specialization

New product development, food preservation and processing, food chemistry, lipid oxidation, nutrient stability, sensory analysis, mineral nutrition, international nutrition, mitochondrial gene expression, molecular biology.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS*

Food Science and Nutrition (M.S.)

Food Science (M.S.)

Nutrition (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE: score subject to review.
- II. Prerequisite: Undergraduate major in food science, nutrition, dietetics, or a closely related field.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (FSN 699R).
- II. Required courses:
 - A. Food science program: FSN 652, 654, 656, 691R.
 - B. Nutrition program: FSN 531, 532, 631R, 691R.
 - C. Food science and nutrition program: Both A and B above.
- III. Minor: Selected with approval of faculty advisor.
- IV. Thesis: Standard university thesis format or journal publication format.
- V. Examinations:
 - A. Comprehensive examination.
 - B. Oral defense of thesis.

*Obtain a copy of the Graduate Student Handbook from department office (2218 SFLC).

Program and Degree Resources

Western Dairy Food Research Center

Dairy Products Laboratory

Sensory Laboratory

Ezra Taft Benson Quality Assurance Laboratory

FOOD SCIENCE AND NUTRITION GRADUATE COURSES

531. **Human Nutrition 1.** (3) F

Prerequisite: FSN 435 or equivalent.

Nutritional status and basis of recommendations for carbohydrates, lipids, protein, and energy.

532. **Human Nutrition 2.** (3) W

Prerequisite: FSN 435 or equivalent.

Nutritional status and basis of recommendations for vitamins, minerals, and water.

594R. **Special Topics in Nutrition.** (1-5) F, W, Sp

Updating knowledge of health science professionals using current information.

599R. **Cooperative Education: Administrative Dietetics.**

(1-8) F, W, Sp, Su

On-the-job experience.

631R. **Selected Topics in Food Science and Nutrition.**

(1-3) F, W, Sp, Su

Prerequisite: FSN 531, 532, or consent of instructor.

Current literature regarding diabetes, diet and cancer, eating disorders, current controversies, food additives, vitamins, diet and cardiovascular disease, obesity and weight control, gerontology, pregnancy and infancy, sports nutrition, nutrition education, proteins, minerals.

638. **Advanced Clinical Nutrition.** (4) F alt. yr.

Prerequisite: FSN 300, 356, 531, 532.

Theory, techniques, and practices.

639. **Advanced Public Health Nutrition.** (3) W alt. yr.

Prerequisite: FSN 400, 531, 532.

Theory and application of principles.

640. **Layout and Design.** (3) F odd yr.

Prerequisite: completion of undergraduate major in dietetics.

Layout and design of institutional food service and other commercial food services: planning, selection, costing, bidding, and appraising food service facilities.

641. **Professional Ethics.** (1) W odd yr.

Developing a professional code of ethics in relation to communications, effective decision making, political expertise, recruitment profiles, job descriptions, and performance analysis and appraisal.

652. **Carbohydrates and Their Reactions in Foods.** (3) Sp even yr.

Prerequisite: FSN 450 or equivalent

Sugars, higher saccharides, starches, pectins, gums, hemicelluloses, celluloses, and their derivatives. their functions and reactions in foods.

654. **Proteins and Their Reactions in Foods.** (3) Su even yr.

Prerequisite: FSN 450 or equivalent.

Plant and animal proteins and their functions and changes during food processing; food enzyme properties.

656. **Food Lipids and Their Reactions in Foods.** (3) Sp odd yr.

Prerequisite: FSN 450 or equivalent.

Lipids and their reactions in foods with other components of the food system and/or the surrounding environment; lipid processing techniques

691R. **Graduate Seminar.** (1-2) F, W

697R. **Research.** (1-3) F, W, Sp, Su

699R. **Master's Thesis.** (1-9) F, W, Sp, Su

DEPARTMENT OF MICROBIOLOGY

Chairman: James A. North, 775 WIDB, 378-2889

Graduate Coordinator: David M. Donaldson, 875 WIDB, 378-4976

Faculty/Specialties

Professors

Burton, Sheril Dale (1967) Ph.D., Oregon State University, 1964. Aquatic Microbial Ecology.

Donaldson, David M. (1955) Ph.D., University of Utah, 1954. Immunology.

Jensen, Marcus M. (1969) Ph.D., University of California, Los Angeles, 1961. Medical Microbiology, Avian Pathology.

Johnson, F. Brent (1972) Ph.D., Brigham Young University, 1970. Virology.

North, James A. (1965) Ph.D., University of Utah, 1964. Virology.

Sagers, Richard D., Associate Dean (1958) Ph.D., University of Illinois, Urbana, 1958. Microbial Biochemistry.

Wright, Donald N. (1969) Ph.D., Iowa State University of Science and Technology, 1964. Clinical Microbiology.

Associate Professors

Anderson, Shauna C. (1974) Ph.D., University of Washington, 1984. Medical Technology, Clinical Chemistry.

Bradshaw, Willard H. (1961) Ph.D., University of California, Berkeley, 1957. Microbial Genetics.

Leavitt, Ronald W. (1977) Ph.D., University of California, San Diego, 1975. Molecular Biology.

Murray, Byron K. (1983) Ph.D., Brigham Young University, 1971. Virology.

Graduate Programs and Degrees

Medical Technology (M.S.)

Microbiology (M.S.)

Microbiology (Ph.D.)

Areas of Specialization

Medical technology: management, chemistry. Microbiology: microbial ecology, genetics, physiology, clinical microbiology, molecular biology, virology, immunology.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS*

Medical Technology (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; minimum score of 1600.
- II. Prerequisites:
 - A. Baccalaureate degree.
 - B. Certification as medical technologist or clinical laboratory scientist with two years' postcertification experience.

Requirements for Degree

- I. Credit hours (39): Minimum 39 hours of approved course work.
- II. Two semesters as a teaching assistant.
- III. Thesis: No thesis required.

Microbiology (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; minimum score of 1600.
- II. Prerequisites:
 - A. Baccalaureate degree in microbiology or in equivalent discipline.
 - B. One year of inorganic chemistry (including laboratory).
 - C. One semester of quantitative analysis.
 - D. One year of organic chemistry.
 - E. One year of general physics at the Physcs. 105 level or higher.
 - F. One semester of calculus.
 - G. Mcbio. 401, 402, 403, 404, or equivalent.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Mcbio. 699R).
- II. Required courses: Mcbio. 691R (attendance required each semester of residence). Others to be selected from 500 and 600-level departmental courses; Chem. 481, 582, 584.
- III. Minor: Any approved minor in biological or physical science.
- IV. An approved teaching experience of one semester.
- V. Thesis: Standard university thesis format or journal publication format.
- VI. Examination: Oral examination on thesis and course work.

Microbiology (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; minimum score of 1600.
- II. Prerequisite: Master's degree in a biological or physical science or recommendation by the departmental graduate admissions committee. (An exceptional student may bypass the M.S. degree with direct acceptance into the doctoral program.)

Requirements for Degree

- I. Credit hours (36): Minimum 36 hours beyond the master's degree, including 18 hours of dissertation (Mcbio. 799R).
- II. Required courses: All required M.S. courses; Chem. 461; Mcbio. 641, 691R (attendance required each semester of residence).
- III. Minor: Any approved minor in biological or physical science.
- IV. Two semesters of approved teaching experience.
- V. Written qualifying examination prior to selection of dissertation topic (may be waived if master's degree was obtained from BYU).
- VI. Skill requirement in foreign languages, computer science, or statistics.
- VII. Dissertation: Standard university dissertation format or journal publication format.
- VIII. Examinations:
 - A. Written and oral comprehensive examination on completion of skill requirement and all course work.
 - B. Oral defense of dissertation.

*Obtain a copy of the Graduate Student Handbook from department office (775 WIDB).

Program and Degree Resources

See college statement on research facilities and projects.

MICROBIOLOGY GRADUATE COURSES

502. Immunology 2. (4) F

Prerequisite: Mcbio. 402 or equivalent.

503. Medical Microbiology 2. (4) W

Prerequisite: Mcbio. 403 or equivalent.

504. Virology 2. (4) W

Prerequisite: Mcbio. 404 or equivalent.

521. **Industrial Microbiology.** (3) W even yr.
Prerequisite: Mcbio. 401 and biochemistry.
541. **Molecular Biology of the Gene.** (4) F
Prerequisite: Mcbio. 375, 404, Chem. 351, 352.
Molecular biology of gene structures and expression in prokaryotic and eukaryotic organisms.
551. **Advanced Microbiology.** (5) W
Prerequisite: Mcbio. 401, Chem. 481.
561. **Radioisotope and Biomolecular Research Methodology.** (3) F
Prerequisite: college physics and Mcbio. 502 or 504.
581. **History of Microbiology.** (1) F
601. **Pathogenesis of Infectious Disease.** (2) F even yr.
Prerequisite: Mcbio. 503 or consent of instructor.
611. **Advanced Immunology.** (2) W odd yr.
Prerequisite: Mcbio. 502.
629. **Advanced Clinical Laboratory Science.** (3) F odd yr.
Clinical techniques and their relationship to disease. Topics in hematology, microbiology, immunohematology, and clinical chemistry.
631. **Advanced Virology.** (2) W even yr.
Prerequisite: Mcbio. 504; Chem. 481 or equivalent.
632. **Cell and Tissue Culture Techniques.** (2) W even yr.
Prerequisite: Mcbio. 504; Chem. 481 or equivalent.
Advanced procedures in cell culture.
642. **Molecular Biology of the Cell.** (2) W odd yr.
Prerequisite: Mcbio. 541
Structure and function of the prokaryotic and eukaryotic cells at the molecular level. Emphasis on molecular aspects of membranes, cytoskeleton, organelles, cell-to-cell communication, and cell movement.
- 651R. **Special Topics in Microbiology.** (1-2) F, W, Sp, Su
- 652R. **Special Topics in Clinical Laboratory Science.** (1-2) F, W, Sp, Su
661. **Microbial Genetics.** (4) F even yr.
Prerequisite: Mcbio. 401, a course in general genetics, and Chem. 481 or equivalent.
Molecular basis of genetics of bacteria and bacteriophages, including mechanisms of DNA transfer, uptake, recombination, replication, and mutation.
671. **Clinical Correlation.** (2) W
Correlating laboratory data with the diagnosis, pathogenesis, progress, and treatment of disease.
- 691R. **Graduate Seminar.** (1) F, W
- 695R. **Research.** (Arr.) F, W, Sp, Su
- 699R. **Master's Thesis.** (1-9) F, W, Sp, Su
- 799R. **Doctoral Dissertation.** (1-9) F, W, Sp, Su

DEPARTMENT OF ZOOLOGY

Chairman: Richard W. Heninger, 575 WIDB, 378-6069
Graduate Coordinator: Ferron L. Andersen, 123 WIDB, 378-4145

Faculty/Specialties

Professors

- Allen, A. Lester (1954) Ph.D., University of California, Los Angeles, 1951. Bioethics.
- Andersen, Ferron L. (1967) Ph.D., Utah State University, 1963. Parasitology.
- Barnes, James R. (1969) Ph.D., Oregon State University, 1972. Aquatic Ecology.
- Booth, Gary M. (1972) Ph.D., University of California, Riverside, 1969. Insect Physiology, Toxicology.
- Bradshaw, William S. (1970) Ph.D., University of Illinois, Urbana, 1968. Developmental Biology.
- Farmer, James L. (1969) Ph.D., Brown University, 1966. Molecular Genetics.
- Heckmann, Richard A. (1972) Ph.D., Montana State University, 1970. Fish Diseases, Parasitology.
- Heninger, Richard W. (1966) Ph.D., Oklahoma State University, 1961. Physiology, Endocrinology.
- Jaussi, August W. (1962) Ph.D., Oklahoma State University, 1960. Comparative Physiology.
- Jorgensen, Clive D. (1960) Ph.D., Oregon State University, 1964. Entomology, Ecology, Insect Pest Control.
- Rhees, Reuben Ward (1973) Ph.D., Colorado State University, 1971. Neuroendocrinology.
- Seegmiller, Robert E. (1972) Ph.D., McGill University, 1970. Developmental Biology, Teratology.
- Smith, H. Duane (1969) Ph.D., University of Illinois, Urbana, 1969. Mammalian Ecology, Wildlife Management.
- Tolman, Richard R. (1982) Ph.D., Oregon State University, 1969. Science Education.
- White, Clayton M. (1970) Ph.D., University of Utah, 1968. Raptor Biology, Ornithology, Avian Systematics and Evolution.
- Winder, William W. (1982) Ph.D., Brigham Young University, 1971. Exercise Physiology and Endocrinology.
- Wood, Stephen L. (1956) Ph.D., University of Kansas, 1953. Bark Beetle Systematics.

Associate Professors

- Baumann, Richard W. (1975) Ph.D., University of Utah, 1970. Aquatic Insect Systematics, Biology, and Distribution.
- Black, Hal L. (1975) Ph.D., University of New Mexico, 1972. Ecology, Animal Behavior.
- Braithwaite, Lee F. (1964) Ph.D., Brigham Young University, 1970. Marine Biology.
- Jeffery, Duane E. (1969) Ph.D., University of California, Berkeley, 1972. Ecological and Evolutionary Genetics of *Drosophila* and Related Organisms.
- Pritchett, Clyde L. (1967) Ph.D., University of Wyoming, 1977. Mammalian Ecology, Wildlife Management.
- Shiozawa, Dennis Kenji (1978) Ph.D., University of Minnesota, St. Paul, 1978. Aquatic Ecology, Limnology, Ichthyology.
- Sites, Jack W., Jr. (1982) Ph.D., Texas A&M University, 1980. Evolutionary Genetics, Vertebrate Biology.
- Smith, Lamont W. (1970) Ph.D., West Virginia University, 1970. Reproductive Physiology of Domestic Animals.
- Van De Graaff, Kent M. (1975) Ph.D., Northern Arizona University, 1973. Comparative Anatomy.
- Whitehead, Armand T. (1969) Ph.D., University of California, Berkeley, 1969. Entomology, Insect Physiology.

Assistant Professors

- Evans, R. Paul (1987) Ph.D., Virginia Commonwealth University, 1983. Molecular Biology.

Maurer, Brian A. (1986) Ph.D., University of Arizona, 1984.
Avian Population and Community Ecology, Ecological Theory, Macroecology.

Graduate Programs and Degrees

Biological Science Education (M.S.)
Entomology (M.S.)
Wildlife and Range Resources (M.S.)
Zoology (M.S.)
Entomology (Ph.D.)
Wildlife and Range Resources (Ph.D.)
Zoology (Ph.D.)

Areas of Specialization

Endocrine physiology, exercise physiology, avian biology, environmental toxicology, mammalian and insect systematics, molecular and cytogenetics, marine and freshwater biology; evolution, developmental biology and teratology; parasitology.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS*

Biological Science Education (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: March 1 (to receive full consideration for first-round acceptance and awarding of possible financial aid. Applications received by March 1 will normally be acted on by April 1). Statement of intent must explicitly state field of interest and career goals.
 - B. Entrance examination: General GRE and advanced biology subject test; score of 1600 on general test, 50% on subject test. Scores must be submitted with the application to be considered for regular admission. Applicants who have not yet completed the GRE, or who score between 1500 and 1600 but have a GPA of 3.0 or above for the last 60 hours, may be considered for provisional admission. However, an applicant cannot be advanced to "regular" status until the GRE scores are on file in the department.
- II. Entry time: Fall semester.
- III. Applicants are encouraged to communicate with the Zoology Department (575 WIDB) for further information.

Requirements for Degree

- I. Credit hours (30): Minimum 24 approved course work hours plus 6 project hours (Zool. 698R).
- II. Required courses: Zool. 503, Zool. 696R (1 hour).
- III. Project.
- IV. Examination: Oral defense of project.

Entomology (M.S.)

Zoology (M.S.)

Wildlife and Range Resources (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: March 1 (to receive full consideration for first-round acceptance and awarding of possible financial aid. Applications submitted by March 1 will normally be acted on by April 1). Statement of intent must explicitly state field of interest and career goals.

- B. Entrance examination: General GRE and advanced biology subject test; score of 1600 on general test and 50% on subject test. Scores must be submitted with the application to be considered for regular admission. Applicants who have not yet completed the GRE, or who score between 1500 and 1600 but have a GPA of 3.0 or above for the last 60 hours, may be considered for provisional admission. However, an applicant cannot be advanced to "regular" status until the GRE scores are on file in the department.

II. Entry time: Fall semester.

- III. Applicants are encouraged to communicate with the Zoology Department (575 WIDB) for further information.

Requirements for Degree

- I. Credit hours (30): Minimum 24 hours plus 6 thesis hours (Zool. 699R).
- II. Required courses: Zool. 503, 696R (1 hour).
- III. Thesis: Standard university thesis format or journal publication format.
- IV. Examinations:
 - A. Oral defense of research.
 - B. Oral examination on course work.
 - C. Oral defense of thesis.

Entomology (Ph.D.)

Zoology (Ph.D.)

Wildlife and Range Resources (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: March 1 (to receive full consideration for first-round acceptance and awarding of possible financial aid. Applications submitted by March 1 will normally be acted on by April 1). Statement of intent must explicitly state field of interest and career goals.
 - B. Entrance examination: General GRE and advanced biology subject test; score of 1600 on general test. Scores must be submitted with the application to be considered for regular admission. Applicants who have not yet completed the GRE or who score between 1500 and 1600 but have a GPA of 3.0 or above for the last 60 hours, may be considered for provisional admission. However, an applicant cannot be advanced to "regular" status until the GRE scores are on file in the department.
- II. Prerequisite: Master's degree in zoology or equivalent.
- III. Entry time: Fall semester.
- IV. Applicants are encouraged to communicate with the Zoology Department (575 WIDB) for further information.

Requirements for Degree

- I. Credit hours (42): 42 hours including 18 hours of dissertation (Zool. 799R).
- II. Required courses: Zool. 503 or equivalent; 696R (1 hour).
- III. Skill requirement: Includes 21 hours in skill subject area of foreign languages, mathematics, statistics, and/or computer science. Consult department for details.
- IV. Dissertation: Standard university dissertation format or journal publication format.
- V. Examinations:
 - A. Oral defense of research.

- B. Written and oral examinations on course work.
- C. Oral defense of dissertation.

*Obtain a copy of the Graduate Student Handbook from department office (575 WIDB).

Program and Degree Resources

Squirrel Meadows, Idaho
 Ephraim Experiment Station
 Dugway Proving Grounds
 M. L. Bean Life Science Museum
 Benmore Experiment Station, Vernon
 Lytle Ranch
 Hopkins Marine Station
 Friday Harbor (Washington) Laboratories
 Desert Range Experiment Station, Pine Valley

ZOOLOGY GRADUATE COURSES

503. Research Orientation. (1) F

Departmental graduate procedures; techniques used in researching zoological literature. Students must register for this class the first fall semester of their graduate studies.

504. Research Methodology. (1) W

Prerequisite: Zool. 503.

Techniques of zoological research and manuscript preparation.

526. (Zool.-Botny.) Cell Biology. (3) F alt. yr

Prerequisite: introductory course in biochemistry.

Molecular physiology and ultrastructure of cells, emphasizing eukaryotic organisms.

534. Economic Entomology. (3) W even yr.

Prerequisite: Zool. 331.

535. Medical Entomology. (3) W even yr.

Prerequisite: Zool. 331.

Arthropods and arachnids that affect the health of man and domestic animals.

536. Comparative Toxicology. (3) W

Prerequisite: general biology and a course in organic chemistry.

Modes of action and biological transformations of pesticides in living animals, plants, and the environment, emphasizing techniques.

537. Aquatic Entomology. (2) F even yr.

Recommended: Zool. 331.

Morphology, classification, biology, and functional ecology of aquatic insects.

538. Immature Insects. (2) F odd yr.

Recommended: Zool. 331.

Morphology, systematics, and biology of immature insects.

549R. Advanced Topics in Zoology. (1-4) F, W on dem.

Prerequisite: consent of instructor.

Topics vary. See Class Schedule.

551. (Zool.-Botny.-Range) Quantitative Ecology. (3) W even yr.

Prerequisite: Zool.-Botny. 350 or equivalent, Stat. 221 or 501.

Methods of community analysis.

552. (Zool.-Botny.-Range) Terrestrial and Rangeland Ecosystems. (4) F even yr.

Prerequisite: Zool.-Botny. 350 or equivalent, Stat. 221 or 501.

Biotic communities of the earth; population dynamics; reproductive, life-form, and longevity patterns; species interactions; structure, dynamics, and evolution of communities.

556. Limnology. (4) W odd yr.

Prerequisite: Zool. 350.

Biotic and physical-chemical properties of lakes and streams. Saturday field trips required.

560. Advanced Human Anatomy. (2) F

Prerequisite: Zool. 260 or 463 and consent of instructor.

Anatomical facts of clinical significance, with opportunity to dissect cadavers.

565. Endocrinology. (3) W

Prerequisite: Zool. 460 or equivalent.

566. Experimental Endocrinology. (2) W

Prerequisite: completion of or concurrent registration in Zool. 565.

Techniques used in research.

579R. Advanced Topics in Genetics. (1-4) F, W on dem.

Topics vary. See Class Schedule.

584. (Zool.-Psych.) Neurophysiology. (3) W odd yr.

Prerequisite: Zool. 460 or equivalent.

Physiology of nerve cells and neuronal interactions.

591R. Special Problems in Zoology. (1-2) F, W, Sp, Su

Prerequisite: consent of instructor.

601. Zoogeography. (2) F even yr.

Distribution of animals, patterns and causes.

609. Systematic Zoology. (2) W odd yr.

Principles of systematics in invertebrates and vertebrates, including taxonomy, phylogeny, classification, and distribution.

633R. Advanced Topics in Entomology. (1-2) F, W on dem.

Prerequisite: consent of instructor.

Topics vary. See Class Schedule.

657R. Advanced Topics in Animal Ecology. (2) F, W on dem.

Prerequisite: Zool. 350.

Topics vary. See Class Schedule.

662R. Advanced Topics in Physiology. (2) F

Prerequisite: Zool. 460.

Topics vary. See Class Schedule.

663R. Experimental Physiology. (2) W

Prerequisite: Zool. 460.

Topics vary. See Class Schedule.

696R. Graduate Seminar. (0-5) F, W

Topics vary. See Class Schedule.

698R. Master's Project. (Arr.)

699R. Master's Thesis. (Arr.)

799R. Doctoral Dissertation. (Arr.)

Dean: Ralph B. Smith, Professor, Educational Leadership (343 MCKB)

Associate Dean, Graduate Studies: Ronald D. Bingham, Professor, Educational Psychology (343 MCKB)

Associate Dean, Undergraduate Studies: Dan W. Andersen, Professor, Educational Leadership (343 MCKB)

The following departments are included in the College of Education:

- Educational Leadership
- Educational Psychology
- Elementary Education
- Secondary Education

Graduate study in the College of Education has two central purposes: (1) researching educational processes and issues; and (2) enhancing the preparation of master teachers, principals, counselors, school psychologists, clinical audiologists, and other professionals in education.

The goal of the College of Education is "to develop professional educators who affect both theory and practice in their field and who provide leadership which results in beneficial and significant changes." Undergirding graduate study and the preparation of professional educators is research. The general focus of research is directed by the mission of the college.

SPECIAL FACILITIES

Computer Laboratory with Access to VAX

Computer terminals in the laboratory provide graduate students direct line access to the university's large mainframe computers, enabling students to use several sophisticated programs, such as SPSS and SAS, to analyze research data. These terminals also enable students to search out books in the Harold B. Lee Library.

Graduate Student Project and Research Laboratory

Laboratory space is provided for graduate students who are working with faculty on research, evaluation, and development projects.

Educational Psychology Center

This center affords students an opportunity to learn and practice a variety of applications for the principles and theories they study in their course work. Through practical applications students gain valuable experience in diagnosing learning and achievement difficulties; remedying learning and behavioral problems; consulting with parents, teachers, and other professionals regarding strategies for helping the center's clients; coun-

seling individuals with a variety of academic, vocational, and personal problems; and giving career assessment and guidance to young people and adults.

Study Areas

Graduate study areas are available in the Project and Research Laboratory, the Science Education Laboratory, and the Learning Resource Center.

ADMISSION TO GRADUATE PROGRAMS

Department requirements for admission to graduate programs in the College of Education vary somewhat, depending on major field of study. However, the general requirements described below apply to all students seeking admission to graduate programs.

Transfer and nondegree credit: No more than 10 semester hours of credit acquired at BYU in a nondegree status or transfer credit from another recognized graduate school may be included as part of the master's or doctoral programs.

Transfer and nondegree credit must be approved by the student's advisory committee.

Candidates for the master's degree must:

1. Have a baccalaureate degree.
2. Have a cumulative GPA of 3.0 in the most recent 60 semester hours of college credit.
3. Show acceptable scores on the Graduate Record Examination.
4. Have appropriate professional experience.
5. Graduate within five years following admission.

Candidates for the doctorate must:

1. Have a master's degree (required for most programs).
2. Have a cumulative GPA of 3.3 in the most recent 60 semester hours of college credit.
3. Show acceptable scores on the Graduate Record Examination.
4. Have appropriate professional experience.
5. Graduate within six years following admission.

For specific information regarding admission requirements, dates of application, entrance examination details, and residence requirements, refer to the department sections in this catalogue or the handbook published by the College of Education, "Information for Graduate Students and Faculty."

DEPARTMENT OF EDUCATIONAL LEADERSHIP

Chairman: F. Del Wasden, 310 MCKB, 378-4291
Graduate Coordinator: Norman F. Hyatt, 310 MCKB,
378-3814

Faculty/Specialties

Professors

Andersen, Dan W. (1980) Ph.D., University of Wisconsin, Madison, 1961. Administrative Behavior.
Garfield, Rulon Roy (1978) Ph.D., University of Utah, 1964. Finance, Politics, Business.
Hungerford, Curtiss R. (1977) Ph.D., University of Southern California, 1967. Higher Education.
Hyatt, Norman F. (1970) Ed.D., University of Oregon, 1964. Evaluation, Planning.
Muse, Ivan D. (1970) Ed.D., University of Utah, 1966. Leadership, Curriculum, Gifted and Talented.
Ovard, Glen F. (1965) Ed.D., Stanford University, 1959. Principship, Facilities.
Shute, R. Wayne (1974) Ed.D., University of Southern California, 1964. Instruction, Higher Education, Learning.
Smith, Ralph B. (1963) Ed.D., Brigham Young University, 1962. Higher Education.
Van Alfen, Curtis N. (1967) Ed.D., University of Utah, 1967. Leadership, Higher Education, Change in Education.
Wasden, F. Del (1971) Ed.D., Brigham Young University, 1971. Law, Leadership.

Associate Professors

Butterfield, Dennis D. (1974) Ed.D., University of California, Los Angeles, 1972. Curriculum, Instruction.
Harms, Callis R. (1960) Ed.D., Arizona State University, 1961. Research, Curriculum.
Webb, Clark D. (1966) Ph.D., University of Texas, Austin, 1970. Curriculum, Writing, Leadership.

Graduate Programs and Degrees

Leadership in Administration (M.Ed.)
Leadership in Curriculum and Instruction (M.Ed.)
Leadership in Administration (Ed.D.)
Leadership in Curriculum and Instruction (Ed.D.)
Leadership in Administration (Ph.D.)
Leadership in Curriculum and Instruction (Ph.D.)

Areas of Specialization

Public and Private School Administration, Higher Education.

Endorsements to Teaching Certificates

Graduate programs in the Department of Educational Leadership are not designed to complete teacher certification and endorsement requirements, but rather to prepare educational leaders with the necessary knowledge and skills for educational leadership. Students are advised to note the distinction as they plan for graduate study. Consult the department for information.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Leadership in Administration (M.Ed.)

Leadership in Curriculum and Instruction (M.Ed.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: April 1.
 - B. Entrance examination: GRE (GEN: 900 verbal and quantitative; 500 analytical).
 - C. GPA: Minimum of 3.0 for last 60 hours.
- II. Prerequisites:
 - A. Baccalaureate degree.
 - B. Curriculum and instruction or administrative leadership specialty candidates: Valid teaching credential and a minimum of one year teaching experience.
- III. Entry time: Summer term only.

Requirements for Degree

- I. Credit hours (36): Minimum 36 course work hours.
- II. Required courses: Consult outline available in department office.
- III. Study list: Failure to submit by the end of the first semester may result in discontinuance from the program.
- IV. Credit limitations: ELDR 515R or extension credit will not be counted toward a degree program.
- V. Residence: At least one full-time registration (9 hours) must be taken on the BYU Provo campus.
- VI. Education improvement project.
- VII. Examinations: Final written and/or oral comprehensive examination covering all course work. A student who fails the final examination may retake the examination once, no sooner than the following semester.

Minimum Registration: Following acceptance to the M.Ed. program, students will be expected to work continuously toward completion of all requirements for the degree. The university requires that students complete at least 6 semester hours of approved program credit from the study list during each academic year (September 1 to August 31). Students discontinued for failure to comply with minimum registration requirements or for lack of progress may not be reinstated in the program.

Leadership in Administration (Ed.D.)

Leadership in Curriculum and Instruction (Ed.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: January 15.
 - B. Entrance examination:
 1. GRE (GEN: 1000 verbal and quantitative; 500 analytical).
 2. Department may require additional examinations.
- II. Prerequisites:
 - A. Master's degree.
 - B. Leadership in administration candidates:
 - Three years of educational leadership experience in the public schools; current position of leadership related to the major and consistent with doctoral study.

- C. Leadership in curriculum and instruction candidates: Valid teaching credential and/or appropriate educational and professional experience; minimum of three years of professional experience in a leadership position related to the major.

- III. Entry time: Summer term only. Students admitted for the summer term who fail to matriculate will be discontinued from the program.

Requirements for Degree

- I. Credit hours (90): Minimum of 78 course work hours plus 12 hours dissertation (ELDR 799R); minimum of 45 hours taken in the BYU doctoral program. Credit earned in a recognized advanced degree program may apply.
- II. Required courses:
 - A. See program outline available in department office. Course work outside the college is required.
 - B. Course work in research statistics.
- III. Study list: Failure to submit by the end of the first semester may result in discontinuance from the program.
- IV. Credit limitations: ELDR 515R or extension credit will not be counted toward a degree program.
- V. Minor: 18 hours in a department outside the College of Education.
- VI. Residence:
 - A. Full-time doctoral students: Two consecutive full-time semester registrations (at least 9 hours each) on the BYU campus.
 - B. Organized group students: Three consecutive full-time summer terms (at least 8 hours each) on campus and intervening supervised field experiences.
 - C. Only 3 hours of dissertation credit may apply toward residency.
- VII. Dissertation: This must be a rigorous, independent, guided research project involving the identification and solution of a significant problem in educational leadership. Students should understand that the Ed.D. emphasizes the application of theoretical constructs to educational policies and practices. Dissertations should reflect this emphasis. The Ed.D. dissertation carries 12 credit hours and may not be undertaken until successful completion of the comprehensive examination and approval of the dissertation prospectus by the advisory committee and the department chairman. The dissertation and prospectus defense are different in kind from course work per se; therefore, performance on these tasks may not correlate with performance in individual courses.
- VIII. Examinations:
 - A. Written and oral comprehensive examinations.
 - B. Oral defense of dissertation, conducted during fall and winter semesters only.

Minimum Registration: Following acceptance to the doctoral program, students will be expected to work continuously toward completion of all requirements for the degree. The university requires that students complete at least 6 hours of approved program credit from the study list during each academic year (September 1 to August 31). Students discontinued from the program for lack of satisfactory progress or minimum registration will not be readmitted.

Leadership in Administration (Ph.D.)

Leadership in Curriculum and Instruction (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: January 15 for summer term entrance; April 1 for fall semester entrance; September 1 for winter semester entrance.
 - B. Entrance examinations: GRE (GEN: 1100 verbal and quantitative; 500 analytical).
- II. Prerequisites:
 - A. Master's degree.
 - B. Leadership in administration candidates: Minimum of three years of professional experience in leadership and/or administration consistent with the major area of study.
 - C. Leadership in curriculum and instruction candidates: Minimum of three years of professional experience consistent with major area of study.

Requirements for Degree

- I. Credit hours (96): Minimum of 78 hours beyond the baccalaureate degree including skill requirement, plus 18 hours of dissertation credit (ELDR 799R); 12 hours outside the college. Credit earned in a recognized advanced degree program may apply upon the recommendation of advisory committee.
- II. Required courses: Consult department for specific major core courses.
- III. Study list: Failure to submit by the end of the first semester may result in discontinuance from the program.
- IV. Credit limitations: ELDR 515R or extension courses are not accepted toward degree programs.
- V. Minor: 18 hours in a department outside the College of Education.
- VI. Residence: Two consecutive full-time semesters (9 hours each semester) on the BYU campus.
- VII. Skill requirement: Consult with department.
- VIII. Dissertation: This must be a rigorous, independent, guided research project. The purpose of the Ph.D. is to expand, in creative ways, the theoretical knowledge base of the field of educational leadership. The dissertation should reflect this emphasis. The Ph.D. dissertation carries 18 credit hours and presumes advanced research expertise. It may not be undertaken until the successful completion of the comprehensive examination and approval of the dissertation prospectus by the advisory committee and the department chairman. The dissertation and prospectus defense are different in kind from course work per se; therefore, performance on these tasks may not correlate with performance in individual courses.
- IX. Examinations:
 - A. Written and oral comprehensive examination.
 - B. Oral defense of dissertation, conducted fall and winter semesters only.

Minimum Registration: Following admission to the doctoral program, students will be expected to work continuously toward completion of all requirements for the degree. The university requires that students complete at least 6 hours of approved program credit from the study list during each academic year (September 1 to August 31). Students discontinued from the program for lack of satisfactory progress or minimum registration will not be readmitted.

EDUCATIONAL LEADERSHIP GRADUATE COURSES

Note: ELDR 515R is for certification purposes only and is listed in the BYU General Catalogue.

516. Master's Orientation Seminar. (2V) Su

Fundamental educational questions answered through interaction with faculty and other students.

517. Professional and Scholarly Writing in Education. (3V) F, W, Su

Refinement of skills for professional writing efforts, e.g., memoranda, reports, articles, theses, etc. Practice and corrective feedback.

531. Principles of Learning. (2) W, Su

Improvement of learning through understanding underlying psychological principles and theories.

532. Gifted and Talented: Programs. (2) F, Su

Examination of a variety of programs for gifted and talented students in the schools.

535. Gifted and Talented: Curriculum and Instruction. (2) W, Su

Designing curriculum and instruction for gifted and talented students in the schools.

537. Gifted and Talented: Creativity. (2)

Nature of creativity and approaches to nurturing it.

539R. Gifted and Talented: Practicum. (4V) F, W

Experience in a school setting under the direction of college faculty settings.

600. Stewardship: The Human Domain. (3) F, Su

Fundamental concepts of human development toward high-performance administrative behavior, emphasizing intra- and interpersonal relationships in educational institution settings.

601. Stewardship: The Organizational Domain. (3) W, Su

Selected contemporary theories of organizational behavior and development applied to educational institution settings.

608. School Community Relations. (2) F, Su

Understanding and skills necessary to foster positive relationships with the communities and the school.

610. Elementary School Leadership. (2) F, Su

Prerequisite: ELDR 600 or consent of instructor.

Purpose, organization, and function of the public elementary school. Case studies provide insight and experience with various administrative problems peculiar to elementary schools.

612. Secondary School Leadership. (2) W, Su

Prerequisite: ELDR 600 or consent of instructor.

Purpose, organization, and administration of secondary schools. Administrative problems: curriculum and instruction, scheduling, beginning and ending school, attendance, discipline, student activities, etc.

613. Higher Education in America. (3) F

Prerequisite: ELDR 600 or 601.

History and philosophy of the American institution of higher learning, emphasizing its relationship to American civilization.

614. Special Education Leadership. (2) Su

Problems and issues related to the administration of special education programs and units. Legislative and legal guidelines explored.

618. Adult and Continuing Education Leadership. (2) Su

Principles, concepts, procedures, and relationships in administering adult and continuing education in a variety of organizational settings.

620. Educational Finance. (2) Sp, Su

Theory, principles, and general practices of public school finances; equalization and finance problems.

622. The Law and Education. (2) F, Sp, Su

Evolution of American law and its application to American educational systems. Fundamental sources and principles of the law, the judicial structure, and key court cases affecting education in state and federal questions.

628. Supervision of Education. (2) W, Su

Prerequisite: ELDR 600.

Supervisor's role in improving instruction, curriculum development, and staff professional development.

630. Curriculum Inquiry. (2) F, W, Su

Prerequisite: ELDR 600.

Examining the curriculum field through an inquiry approach; differentiating curriculum and instruction.

632R. Practicum in Educational Leadership. (1-6) F, W

Prerequisite: ELDR 610, 612, 630.

Working with a school administrator as a supervised intern.

634R. Internship in Educational Leadership. (1-12) F, W, Sp, Su

Prerequisite: ELDR 610, 612, 628.

Field experience in education in state and local school districts, in community colleges, and in other agencies.

636R. Directed Independent Study, Master's. (2V) F, W, Sp, Su

638. Instruction: Research and Practice. (2) Su

Methods and processes of instruction.

640. The Community College. (2) W, Su

History and philosophy of the American two-year college, including major trends and prospects for this uniquely American educational institution.

654R. Problems in Education Leadership. (1-3) F, W

Prerequisite: ELDR 600.

Problems of extensive and immediate impact on the organization by the operation of legislation, law, social forces, or the public.

658. Political Aspects of Education. (2) F, Su

Understanding processes and institutions in building support for education, and associated issues.

660. Stress and Time Management. (2) W, Sp

Understanding and coping with stress and distress in leadership. Effectively using time in multiple roles in society.

661. Introduction to Research. (3) F, W, Su

Designing and conducting research activities, emphasizing descriptive techniques.

665. Evaluation in Education. (2) F, Su

Prerequisite: ELDR 661.

Nature, purpose, and function of educational evaluation in making judgments about pupils, teachers, instructional materials, academic programs, curricula, and school systems. Designing evaluation projects.

667. **Practicum in Evaluation.** (2) F, W
Prerequisite: ELDR 665.

Conducting and reporting a comprehensive project in evaluation.

670R. **Workshops in Educational Leadership.** (1–3)
Prerequisite: ELDR 610, 612.

672. **Technological Applications in Educational Leadership.** (3) F, Su

Exploring administrative and instructional applications of technology in public schools. Evaluating software and commercially available materials.

684. **Business Administration in Education.** (2) W, Alt. term

Administering details of executive business affairs in educational institutions.

686. **Professional Negotiations.** (2) Alt. term
Development of and procedures in negotiations.

688. **Educational Facilities.** (2) F, Su

School planning, site selection, master planning, writing educational specifications, functions of architects, supervising and accepting buildings, relationships with governmental agencies, passing bond elections.

691R. **Doctoral Seminar.** (1–3) Su
Prerequisite: consent of department.

693. **Stewardship: Planning and Forecasting.** (2) W, Su
Prerequisite: ELDR 600, 601.

Long-range educational planning in an era of rapid change, emphasizing the identification of problems and the techniques for their resolution.

695R. **Independent Research.** (1–6) F, W, Sp, Su
Prerequisite: consent of instructor.

Individual research study or project.

696R. **Professional Education Project.** (1–6) F, W, Sp, Su

Integrating student interest and scholarly opportunity to provide a disciplined experience in observing, gathering, interpreting, and reporting data.

700. **Leadership.** (3) F, Su
Prerequisite: ELDR 600 or 601.

Developmental leadership, group processes, concepts, and strategies; opportunity for leadership experience.

701R. **Doctoral Orientation Seminar.** (1–3) F, Su
Prerequisite: consent of department.

Problems related to the human relation aspect of stewardship principles.

710R. **Contemporary Problems in Educational Leadership.** (2) W, Su

Critical examination of contemporary educational issues in a variety of categories. Current literature related to issues and problems of American education.

720. **The Superintendency.** (2) F, Su

Analyzing the comprehensive, conceptual problems confronting the school superintending.

731. **Principles of Curriculum Development.** (3) F, W, Su
Prerequisite: ELDR 630.

Curriculum planning and design and their implementation in schools.

734R. **Directed Independent Study, Doctoral.** (1–3) F, W, Sp, Su

Prerequisite: consent of instructor.

737. **Principles and Processes of Educational Change.** (2) F
Understanding the implications and applying the principles of recent research on the educational change process.

738. **Advanced Seminar in Instructional Leadership.** (2) F

Principles and theories of instruction applied to leadership activities in education, emphasizing instructional modeling as a strategy for change.

739R. **Directed Teaching in College.** (1–4) F

Teaching at the college level, participating as a member of a college staff, and preparing for employment at a collegiate institution.

759. **Policy Development in Education.** (2) W, Su

Theory, procedures, and practice in developing policy for educational institutions.

760. **College and University Administration.** (2) W

Relationship between the educational community and the political world in which it operates.

762. **College and University Curriculum.** (2) F

Historical review of curriculum evolution in American colleges and universities as it illuminates present challenges facing higher education administrators.

766. **Problems in Higher Education.** (2) F, W, Sp, Su

768. **Theory in Educational Leadership.** (2) W, Su
Theoretical concepts and constructs, theorists, theory development, implications for administrators/supervisors, etc.

775. **Data Analysis Techniques in Education.** (3) W, Su
Analyzing data in quantitative and qualitative designs.

780. **Economic Aspects of Education.** (2) W, Su
Prerequisite: ELDR 620 or consent of instructor.

Economic basis for financing education; human capital, world view, fiscal and monetary policy.

782. **Advanced School Law.** (2) W, Su

Prerequisite: ELDR 620 or consent of instructor.

Impact of the Constitution on education in America. Cases under constitutional law that have influenced policy and practice in the educational system.

783. **Higher Education Law.** (2) W, Su

Major cases, classic and current, impacting functions and purposes of public and private colleges and universities in America.

788R. **Practicum in Educational Leadership.** (2–6) F, W, Su

Prerequisite: consent in advance of registration.

Design and implementation of on-site research. Development of a prospectus for the doctorate under the direction of a faculty member.

790R. **Seminar in Educational Leadership.** (1–4) Su

795. **Research and Reporting Techniques for Doctoral Dissertation.** (3) F, W, Su

Research designs for planning and conducting research for the doctoral dissertation using survey, inferential, and experimental methods.

799R. Dissertation. (1-18) F, W, Sp, Su
Prerequisite: ELDR 675.

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

Chairman: Parley W. Newman, 328 MCKB, 378-3857
Graduate Coordinator: Darwin F. Gale, 201-D MCKB,
378-6175

Faculty/Specialties

Professors

Brigham, Ronald D. (1971) Ph.D., Pennsylvania State University, 1970. Counseling, Mental Health.
Brey, Robert H. (1978) Ph.D., Wayne State University, 1972. Signal Processing in Learning.
Crandell, John M. (1970) Ph.D., University of Texas, Austin, 1966. Cognitive Processes and Development.
Gale, Darwin F. (1969) Ed.D., Brigham Young University, 1967. Learning Theory, Motivation, Perception.
Harris, James M. (1955) Ph.D., Cornell University, 1955. School Psychology.
Harrison, Betty D. (1961) Ph.D., Brigham Young University, 1965. Learning Disabilities.
Harrison, Grant V. (1969) Ed.D., University of California, Los Angeles, 1969. Product Research.
Heaps, Richard A. (1970) Ph.D., University of Utah, 1970. Counseling.
Hilton, Laurence M. (1985) Ph.D., Northwestern University, 1973. Speech Science and Perception.
Ingram, Gregg F. (1975) Ed.D., University of Kentucky, 1974. Learning Disabilities and Achievement Difficulties.
Kelly, Burton C. (1962) Ph.D., University of Chicago, 1966. Counseling.
Merrill, Paul F. (1977) Ph.D., University of Texas, Austin, 1970. Instructional Strategies.
Newman, Parley W. (1966) Ph.D., University of Iowa, 1954. Stuttering.
Osguthorpe, Russell T. (1978) Ph.D., Brigham Young University, 1975. Research with Handicapped Students.
Rohde, Norma (1965) Ed.D., Brigham Young University, 1965. Counseling.
Thomas, Glen E. (1968) Ed.D., Colorado State College, 1968. Diagnostic Prescriptive Teaching for the Mentally Retarded.
VanMondfrans, Adrian P. (1971) Ph.D., University of Wisconsin, Madison, 1967. Evaluation Theory and Practice.
Walton, Wilbur T. (1971) Ph.D., University of Utah, 1969. Learning/Teaching Styles.
Ward, G. Robert (1981) Ph.D., Michigan State University, 1965. Counseling.

Associate Professors

Buckner, Eugene T. (1968) Ph.D., Brigham Young University, 1970. Counseling.
Chamberlain, Jonathan (1970) Ph.D., University of Wyoming, 1967. Counseling.
Harris, Richard W. (1982) Ph.D., Purdue University, 1978. Hearing Science, Perception.
Inouye, Dillon K. (1978) Ph.D., Stanford University, 1978. Productivity in Learning.

Isakson, Richard L. (1983) Ph.D., Cornell University, 1975. Counseling.
Johnson, Richard W. (1968) Ph.D., Brigham Young University, 1968. Counseling.
Kramer, Gary L. (1982) Ph.D., Oregon State University, 1977. Educational Psychology.
Mouritsen, Maren M. (1978) Ph.D., Columbia University, 1979. Educational Psychology.
Spencer, Robert W. (1967) Ed.D., Brigham Young University, 1971. Educational Psychology.
Winward, Edward J. (1959) Ph.D., University of Missouri, Rolla, 1966. Tests and Measurements.
Wootton, Richard R. (1961) Ed.D., Utah State University, 1969. Counseling and Mental Health.

Assistant Professors

Channell, Ron W. (1983) Ph.D., University of Utah, 1983. Neurolinguistics.
Esplin, Patricia B. (1986) Ph.D., University of Utah, 1976. Counseling.
Rowe, Fred A. (1972) Ed.D., Arizona State University, 1975. Career Guidance.
Simpkins, Katherine E. (1978) Ph.D., Temple University, Philadelphia, 1974. Learning/Teaching Styles.

Graduate Programs and Degrees

Clinical Audiology (M.S.)
Counseling and Guidance (M.S.)
Educational Psychology (M.S.)
Instructional Science (M.S.)
Special Education (M.S.)
Speech/Language Pathology (M.S.)
Speech/Language Pathology and Audiology (M.S.)
Educational Psychology (M.Ed.)
School Psychology (M.Ed.)
Counseling and Personnel Services (Ed.D.)
Educational Psychology (Ed.D.)
Counseling Psychology (Ph.D.)
Educational Psychology (Ph.D.)
Instructional Psychology (Ph.D.)
Instructional Science (Ph.D.)

Areas of Specialization

Speech/language pathology, clinical audiology, instructional psychology, instructional science, school psychology, counseling and guidance, special education, counseling and personnel services, counseling psychology, and educational psychology.

Endorsements to Teaching Certificates

Graduate programs in the Department of Educational Psychology are not designed to complete teacher certification and endorsement requirements, but rather to prepare educational leaders with the necessary knowledge and skills for educational psychology. Students are advised to note the distinction as they plan for graduate study. Consult the appropriate area coordinator in the department.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Clinical Audiology (M.S.)
 Counseling and Guidance (M.S.)
 Educational Psychology (M.S.)
 Special Education (M.S.)
 Speech/Language Pathology (M.S.)
 Speech/Language Pathology and Audiology (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: February 14 for both fall semester and summer term.
 - B. Entrance examination: General GRE; score subject to review. When taking the GRE, use the institutional number R 4248-1-00. Applications will not be considered without GRE scores.
 - C. Because of the nature of the counseling profession, both academic and personal qualifications are considered in selecting applicants and in evaluating, retaining, and graduating students.
- II. Prerequisite: Appropriate educational and professional experience as determined by major area of study.
- III. Entry times: Clinical audiology, speech-language pathology, and speech-language pathology and audiology admit fall semester only. Counseling and guidance, educational psychology, and special education admit fall semester and summer term only.

Requirements for Degree

- I. Credit hours (36–60): Depending on area of specialization, minimum of 36–60 hours of approved course work, including elementary-level statistics (3 hours), research (3 hours), and thesis credit (6 hours).
- II. Required courses: Consult departmental specialty area.
- III. Minor: Approved by advisory committee.
- IV. Residence: At least one full-time registration (9 credit hours minimum) must be completed on the BYU Provo campus.
- V. Thesis.
- VI. Examinations:
 - A. Written comprehensive examination.
 - B. Oral defense of thesis.

Instructional Science (M.S.)**Admission and Entry**

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; score subject to review. When taking the GRE, use the institutional number R 4248-1-00.
- II. Prerequisites: ELDR 517 or Engl. 316; Comms. 272, INDE 250 or EPsy. 587.
- III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Credit hours (36): Minimum 30 course work hours including elementary-level statistics (3 hours), research (3 hours), and 6 thesis hours (EPsy. 699R).
- II. Required courses: EPsy. 515R (Microcomputers in Schools), 564, 651, 652.
- III. Specialization: 8 hours to be determined in consultation with advisory committee.
- IV. Internship: 3 hours (EPsy. 680R).

- V. Residence: At least two full-time semesters (9 hours minimum) must be completed on the BYU Provo campus.
- VI. Thesis.
- VII. Examinations:
 - A. Written comprehensive examination.
 - B. Oral defense of thesis.

Educational Psychology (M.Ed.)**School Psychology (M.Ed.)****Admission and Entry**

- I. Application requirements:
 - A. Deadline: February 14 for both fall semester and summer term.
 - B. Entrance examination: General GRE; score subject to review. When taking the GRE, use the institutional number R 4248-1-00. Application will not be considered without GRE scores.
 - C. Because of the nature of the counseling and psychology professions, both academic and personal qualifications are considered in selecting applicants and in evaluating, retaining, and graduating students.
- II. Prerequisite: Appropriate educational and professional experience as determined by major area of study.
- III. Entry times: Educational psychology admits fall semester and summer term only. School psychology admits fall semester only.

Requirements for Degree

- I. Credit hours (36–48): Depending on area of specialty, minimum of 36 hours of approved course work including research, practicum, internship, and project.
- II. Required courses: Consult department specialty area.
- III. Residence: At least one full-time registration (9 hours minimum) must be completed on the BYU Provo campus.
- IV. Minor: Approved by advisory committee.
- V. Project.
- VI. Examination: Final written comprehensive examination.

Counseling and Personnel Services (Ed.D.)**Educational Psychology (Ed.D.)****Admission and Entry**

- I. Application requirements:
 - A. Deadline: February 14 for both fall semester and summer term entrances.
 - B. Entrance examination: General GRE; score subject to review. When taking the GRE, use the institutional number R 4248-1-00. Applications will not be considered without GRE scores.
 - C. Because of the nature of the counseling and psychology professions, both academic and personal qualifications are considered in selecting applicants and in evaluating, retaining, and graduating students.
- II. Prerequisites:
 - A. Master's degree in a related area.
 - B. Appropriate professional experience as determined by major area of study.
- III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Credit hours (90–96): Minimum of 78–84 hours of approved course work (which may include, with faculty committee approval, up to 36 hours of appropriate credit from a master's degree), skill courses, plus 12 hours of dissertation credit.
- II. Required courses: Consult department specialty area.
- III. Minor: Approved by advisory committee.
- IV. Residence: Minimum of two consecutive full-time semesters (9 credit hours minimum each) beyond the master's degree on the BYU Provo campus.
- V. Dissertation.
- VI. Examinations:
 - A. Written comprehensive examination upon completion of course requirements.
 - B. Oral defense of dissertation.

Counseling Psychology (Ph.D.)

Educational Psychology (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: February 14 for both fall semester and summer term entrances.
 - B. Entrance examination: General GRE; score subject to review. When taking the GRE, use the institutional number R 4248-1-00. Applications will not be considered without GRE scores.
 - C. Because of the nature of the counseling and psychology professions, both academic and personal qualifications are considered in selecting applicants and in evaluating, retaining, and graduating students.
- II. Prerequisites:
 - A. Master's degree in education or psychology, or in a closely related field.
 - B. Appropriate professional experience as determined by major area of study.
- III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Credit hours (90–96): Minimum of 72–78 hours of approved course work (which may include, with faculty committee approval, up to 36 hours of appropriate credit from a master's degree), plus 18 hours of dissertation credit.
- II. Required courses: Consult department.
- III. Minor: Approved by advisory committee.
- IV. Residence: Minimum of two consecutive full-time semesters beyond the master's degree (minimum 9 credit hours each semester) on the BYU Provo campus.
- V. Skill requirement: Consult department specialty area.
- VI. Dissertation.
- VII. Examinations:
 - A. Written comprehensive examination at completion of course work.
 - B. Oral defense of dissertation.

Instructional Psychology (Ph.D.)

Instructional Science (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.

B. Entrance examination: General GRE; score subject to review. When taking the GRE, use the institutional number R 4248-1-00. Applications will not be considered without GRE scores.

- II. Prerequisites: ELDR 517 or Engl. 316; Comms. 272, IndE. 250, or EPsy. 587.
- III. Entry times: Fall semester and summer term.

Requirements for Degree

- I. Credit hours (76 plus skill): Minimum of 58 course work hours plus 18 dissertation hours (EPsy. 799R), plus 18 skill hours.
- II. Required courses: EPsy. 620, 564, 652, 661.
- III. Specialization: 18 hours as determined in consultation with advisory committee.
- IV. Internship: 12 hours (EPsy. 680R).
- V. Three projects: 9 hours.
- VI. Residence: 6 semesters of residence on the BYU Provo campus beyond the baccalaureate degree and four semesters beyond the master's degree. Each student should plan to attend full-time during the first calendar year to take the general preparation classes in proper sequence. A semester of residency is defined as a full-time registration of at least 9 semester hours.
- VII. Skill requirement: EPsy. 515R (Microcomputers in Schools), EPsy. 560, EPsy. 651, Stat. 502, EPsy. 672.
- VIII. Examinations:
 - A. Comprehensive written examination.
 - B. Oral defense of thesis.
- IX. Time limit: All requirements for the doctoral must be completed within a six-year period.

Note: EPsy. 581R, 582R, 584R, 585R and 586R require a \$40 fee in addition to tuition; EPsy. 680R (school psychology) requires an \$80 fee.

**GENERAL EDUCATIONAL PSYCHOLOGY
GRADUATE COURSES**

Note: EPsy. 514R and 515R courses are for certification purposes only and are listed in the BYU General Catalogue. No graduate degree credit given for 514R; 515R credit may count toward a graduate degree if prior approval is obtained.

501. Test and Measurement Theory. (3) F, W, Su
Independent Study also; no graduate degree credit given for Independent Study.

Basic test and measurement theories. Types of tests. Reliability and validity. Standardization and test construction.

502. Behavior Problems in the School. (3) W, Su
Etiology and correction of behavior problems in children.

551. Introduction to Quantitative Reasoning. (3) F, Su

560. Microcomputer Materials Production. (3) W, Su
Prerequisite: EPsy. 286 or 515R (Microcomputers in Schools).

Designing, programming, and debugging educational applications of microcomputers using a high-level computer language.

564. Instructional Design. (3) F, Su

Identifying instructional problems; specifying objectives, instructional strategies, and media; analyzing learning outcomes; developing instructional materials and assessment instruments; validating instructional systems.

587. Audio/Visual Production. (3) W, Su

Designing, producing, and using audio and visual instructional materials. Applying 35-mm photography and audio recording and mixing to education.

601. Advanced Educational Psychology. (3) F, W, Su

General educational psychology: learning theory, motivation, perception, development.

620. Principles of Learning. (3) F, Su

Improving classroom learning through understanding underlying psychological principles and theories.

622. Learning and Motivation. (3) W, Sp

Learning and motivation in an educational setting.

623. Learning and Perceptual Processes. (3) W, Su

Learning and perceptual processes in an educational setting.

651. Quantitative Reasoning. (5) F, Su

Meaning and use of quantitative methods in answering substantive questions of educational theory and practice. Methods of analyzing and interpreting numerical information.

652. Assessing Learning Outcomes. (4) W, Su

Selecting and constructing instruments and procedures for assessing affective, behavioral, and cognitive outcomes of education.

653. Measurement Theory. (3) F

Prerequisite: EPsy. 651.

Classical as well as modern models for conceptualizing and measuring human attributes. Issues and controversies related to item selection, scaling, reliability, validity, and interpreting test scores.

657R. Measurement Project. (1-3) F, W, Sp, Su

Prerequisite: EPsy. 651 and 652.

Designing, conducting, and reporting a comprehensive measurement project.

660. CAI Authoring of Interactive Video. (3) W

Prerequisite: EPsy. 560.

Designing, developing, producing, and authoring intelligent, interactive video courseware. Budgets, project steps, equipment systems, and authoring.

661. Evaluation in Education. (3) F, Su

Nature, purposes, and functions of educational evaluation in making judgments about teachers, instructional materials, academic programs, curricula, and school systems.

663. Evaluation of Educational Programs and Curricula.

(3) W

Prerequisite: EPsy. 661 or consent of instructor.

Problems in designing, conducting, and reporting the results of program and curriculum evaluations.

664. Advanced Instructional Design. (3) W, Su

Prerequisite: EPsy. 564.

Advanced laboratory in instructional system design, production, formative evaluation, packaging, and implementation. Systematic critical analysis of all phases of development.

667R. Evaluation Project. (1-3) F, W, Sp, Su

Prerequisite: EPsy. 661.

Designing, conducting, and reporting a comprehensive project in evaluation.

672. Empirical Inquiry in Education. (3) F, W, Su

Prerequisite: EPsy. 651 or equivalent.

Introduction to empirical research in education. Emphasizes designing, conducting, analyzing, reporting, and evaluating empirical studies in education.

673. Research Synthesis and Conceptualization. (3) F

Prerequisite: EPsy. 672.

Survey of major research problems, questions, and theories that have been investigated in instructional science. Preparing critical, integrative synthesis of completed research; conceptualizing problems for further inquiry. Research prospectus required.

674R. Inquiry Methods. (1-3) W

Prerequisite: EPsy. 672 or consent of instructor.

Specific inquiry strategies for researching practical educational problems. Strategy studied varies from section to section.

—Naturalistic Inquiry in Education

—Quasi-experimental Studies

—Cost-Benefit Analysis in Education

—Meta-Analysis

—Theory Building and Modeling in Education

677R. Research Project. (1-3) F, W, Sp, Su

Prerequisite: EPsy. 672.

Designing, conducting, and reporting a comprehensive project in research.

680R. Internship. (1-6) F, W, Sp, Su

Prerequisite: departmental approval.

682. Project and Instructional Resource Management.

(3) F

Managing research, development, and evaluation projects in public schools and higher education. Planning, budgeting, supervision, personnel management, and scheduling.

687R. Development Project. (1-3) F, W, Sp, Su

Prerequisite: EPsy. 564.

Designing, conducting, and reporting a comprehensive project in development.

690R. Seminar. (1-3) F, W, Sp, Su

Check current Class Schedule for seminar topics.

691R. Doctoral Seminar. (1-2) F, Su**692R. Advanced Topics.** (1-3) F, W, Sp, Su**693R. Directed Individual Study.** (1-3) F, W, Sp, Su

Prerequisite: consent of instructor.

697R. Special Projects. (2-6) F, W, Sp, Su

Prerequisite: Stat. 552 and EPsy. 671 or equivalent.

699R. Master's Thesis. (1-6) F, W, Sp, Su**760. Advanced CAI Topics and Programming.** (3) F

Prerequisite: EPsy. 560.

Current issues, research, and applications of computer technology in education. Advanced programming.

780R. Advanced Internship. (2-8) F, Sp, Su

Prerequisite: departmental approval of application and placement one semester in advance of registration.

790R. Advanced Seminar. (1-3) F, W, Sp, Su

Check current Class Schedule for seminar topics.

799R. Doctoral Dissertation. (1–9) F, W, Sp, Su
Prerequisite: completion of skill requirements.

Formal report and defense of a substantive research topic designed to make an original contribution to knowledge in the field.

COUNSELING AND SCHOOL PSYCHOLOGY GRADUATE COURSES

546. **Helping Relationships: Basic Concepts and Skills.** (1–3) F, W, Su

Basic interviewing and helping skills. For students interested in professional, paraprofessional, peer, or lay counseling.

600. **Introduction to Counseling and Guidance.** (3) F
Independent Study also; no graduate degree credit given for Independent Study.

Introduction to the counseling profession: history, philosophy, issues, trends, and current status. Role of counselor in school and community agency settings.

606. **Psychological Foundations of Counseling.** (3) F

Fundamental concepts and theories of motivation, human development, learning, personality, and abnormal psychology as they relate to counseling.

635. **Human Growth and Development.** (3) F

Current theories and research on physical, emotional, social, and intellectual growth and development.

645. **Theory and Use of Tests in Counseling.** (3) W

Prerequisite: EPsy. 501, 600.

Administering and interpreting specific group-standardized tests: personality, relationships, achievement, ability, behavioral, etc.

646. **Counseling Theory.** (3) F, Su

Prerequisite: EPsy. 600.

Various theories of counseling, current research, and accepted practices.

647. **Individual Testing in Theory and in Practice in Education.** (3) F

Prerequisite: EPsy. 501, 625 and/or 645, and consent of instructor.

Theory and experience in administering and interpreting individual intelligence tests in an educational setting.

648. **Group Counseling.** (3) W

Prerequisite: EPsy. 646 or consent of instructor.

Various approaches to group counseling. Developing and participating in structured group experiences.

649. **Career Development.** (3) W

Prerequisite: EPsy. 600.

Theories of vocational development. Influences of the world of work on career development; understanding career selection processes.

650. **Leadership in Helping Organizations.** (3) Sp, Su

Prerequisite: EPsy. 600.

Leadership theory; organizing, administering, and implementing counseling and pupil personnel services in schools and other settings.

654. **Career Guidance.** (3) F

Requirements for a resource center; knowledge of resources available in the community; an applied approach to career guidance.

665. **Career Assessment.** (3) F, W, Su

Applying testing and measurement theory in the areas of aptitudes, interests, and values in the counseling process.

675. **Behavioral Theory and Techniques.** (3) Sp

Applying behavioral theories in counseling, including biofeedback, relaxation training, and systematic desensitization.

678. **Counseling Practicum 1.** (3) F, W

Observing counseling techniques in settings where counseling takes place. Practicing beginning counseling skills. Laboratory required.

679. **Counseling Practicum 2.** (3) F, W

Prerequisite: EPsy. 678; departmental approval of application and placement one semester in advance of registration.

Supervised beginning and intermediate counseling techniques and other responsibilities in school or community counseling settings. Laboratory required.

680R. **Internship.** (2–6) F, W

Prerequisite: EPsy. 679; departmental approval of application and placement one semester in advance of registration.

Practicing individual and group skills, testing and other techniques, and responsibilities consistent with advanced master's students.

695R. **Counseling Seminar.** (1–3) W, Sp, Su

710. **Ethics and Standards in Counseling Psychology.** (3) F

Ethics and standards applied to counseling and psychology, including legal issues, licensing, and professionalism.

715. **Diagnosis of Psychological Problems in Counseling.** (3) Su

Theory, diagnosis, and classification of emotional problems related to education, psychology, and counseling.

720. **Fundamentals of Learning Theory and Cognitive Development.** (3) F

Learning and cognitive developmental theories and their application to behavioral change.

725. **Theory and Practice of Objective Personality Tests: MMPI.** (3) W

Administering and interpreting the MMPI with relevant application and current research. Enrollment limited to doctoral students in counseling.

745. **Advanced Counseling Theory.** (3) F

Prerequisite: EPsy. 646.

Various theoretical approaches to counseling.

746R. **Supervision Theory and Practice in Counseling.** (3) F, W, Su

Prerequisite: EPsy. 680R and consent of instructor.

This course is taken in two parts: (1) student must first enroll summer term for the Theory of Supervision part; then (2) enroll during a subsequent fall or winter semester for the Practice of Supervision part.

748. **Advanced Group Theory and Process.** (3) W

Prerequisite: EPsy. 648.

Advanced theory of groups.

779R. **Advanced Practicum in Counseling.** (1–4) F, W

Prerequisite: EPsy. 680R; departmental approval and placement one semester in advance of registration.

780R. Doctoral Internship in Counseling. (2–8) F, W, Sp, Su
Prerequisite: EPsy. 779 and departmental approval. Students must submit application for practicum one semester in advance of registration.

790R. Advanced Seminar. (1–4) Sp, Su
Prerequisite: departmental approval.

SPECIAL EDUCATION GRADUATE COURSES

503. Education of the Mildly and Moderately Handicapped. (3) F, W, Su
Prerequisite: EPsy. 405, 480R, and concurrent registration in EPsy. 586R.

505. Psycho-educational Implications of Exceptionality. (1–3) F, Sp

506R. Behavioral Science Foundations for Special Education. (1–3) W

510. Education of Emotionally and Behaviorally Handicapped Children. (3)
Prerequisite: EPsy. 101R, 205, consent of instructor, and prior application.

511. Curriculum for the Emotionally and Behaviorally Handicapped. (4) W
Prerequisite: EPsy. 510 and consent of instructor.

518. Education of the Gifted and Talented. (2) F, W, Su
Various approaches to educating the gifted and talented.

519. Education of the Intellectually Handicapped. (3) F, W
Prerequisite: consent of instructor.
Independent Study also; no graduate degree credit given for Independent Study.

520. Curriculum for the Intellectually Handicapped. (3) W, Su
Prerequisite: EPsy. 519.

521. Education of the Multiply Handicapped. (3) W

525. Education of the Learning Disabled. (3) F, Sp
Prerequisite: consent of instructor.

526. Curriculum for the Learning Disabled. (3) W, Sp
Prerequisite: EPsy. 525.
Organization of educational programs, curriculum development, and teaching methods for children with learning disabilities.

580R. Directed Observation in the Schools. (1–3) F, W, Sp, Su
Prerequisite: consent of instructor.

581R. Practicum in Intellectually Handicapped. (4) F, W, Su
Prerequisite: EPsy. 520; departmental approval of application, and placement one semester in advance of registration. Fee.

582R. Practicum in Emotionally and Behaviorally Handicapped. (1–8) W, Su
Prerequisite: consent of instructor, EPsy. 511, and prior application. Fee.

584R. Practicum in Learning Disabled. (2–8) F, W, Su
Prerequisite: EPsy. 526; departmental approval of application, and placement one semester in advance of registration. Fee.

586R. Practicum in Mildly and Moderately Handicapped. (2–8) F, W, Su
Prerequisite: concurrent registration in EPsy. 503; departmental approval of application, and placement one semester in advance of registration. Fee.

603. Guidance and Counseling of the Exceptional Child. (3) W, Su

604. Special Education Services in Public Schools. (2) W, Su

625R. Psychological-Educational Assessment of Learning. (3) F, W, Su
Prerequisite: consent of instructor.

626. Advanced Curriculum in Special Education. (3) F, W, Su
Prerequisite: EPsy. 205 or equivalent.

680R. Internship. (2–6) F, W, Sp, Su
Prerequisite: departmental approval of application and placement one semester in advance of registration.

Practicing individual and group skills, testing, and other techniques and responsibilities consistent with advanced master's students.

SCHOOL PSYCHOLOGY GRADUATE COURSES

610. Problems and Issues in School Psychology. (3) F

680R. Internship. (2–6) F, W, Sp
Prerequisite: departmental approval of application and placement one semester in advance of registration. Must be taken concurrently with 690R seminar.

Practicing individual and group skills, testing, and other techniques and responsibilities consistent with advanced master's students.

690R. Seminar. (1–3) F, W, Sp, Su
Discussion of problems and issues in school psychology. Must be taken concurrently with 680R internship.

AUDIOLOGY GRADUATE COURSES

544. Advanced Hearing Science. (3) Sp, Su alt. term
Hearing anatomy, physiology, and science.

616. Acoustic Impedance Measures. (2) F
Middle ear measurements and special test applications.

617. Auditory Physiological Tests 1. (3) F
Introduction: electronystagmography, evoked potential testing.

618. Auditory Physiological Tests 2. (2) W
Advanced procedures: electronystagmography, evoked potentials.

638. Advanced Hearing Tests and Measures. (3) F
Advanced audiometric procedures assessing impaired hearing.

639. Community and Industrial Audiology. (2) Sp, Su alt. term
Hearing problems in industry; legal implications.

641. Hearing Aids. (3) F
Assessing hearing aid performance and the art of fitting hearing aids.

643. Adult Aural Rehabilitation.

(2) W

Rehabilitative audiology for hearing-impaired adults.

670. Instrumentation in Audiology. (3) W

Prerequisite: IndE. 209.

Instrumentation used in audiology, psychophysics, and speech science; measurement, monitoring, programming, and recording.

671. Instrumentation-Calibration (2) Sp, Su alt. term

Calibration of audiological instruments.

680R. Internship. (2-6) F, W, Sp, Su

Prerequisite: consent of instructor four weeks in advance of registration.

Practicing individual and group skills, testing, and other techniques and responsibilities consistent with advanced master's students.

685R. Practicum in Speech-Language Pathology and Clinical Audiology. (1-8) F, W, Sp, Su

Prerequisite: consent of instructor.

690R. Seminar in Audiology. (1-3) Sp, Su alt. term

690R. Seminar in Clinical Data Acquisition. (3) F

690R. Seminar in Clinical Data Analysis. (3) W

694R. Special Projects in Speech-Language Pathology or Clinical Audiology. (1-3) F, W, Sp, Su

Prerequisite: consent of instructor.

699R. Master's Thesis. (1-6)

**SPEECH-LANGUAGE PATHOLOGY
GRADUATE COURSES**

In presenting the following list of graduate courses in speech-language pathology, it is assumed that a full undergraduate program in the major has been completed. If not, additional prerequisite courses will need to be taken.

572. Voice Disorders. (2) Sp, Su alt. term

573. Aphasia. (3) W

574. Language and Other Communicative Disorders of the Severely Handicapped. (2) W

575. Motor Speech Disorders. (3) F

Neuropathology, symptomatology, clinical assessment, and treatment of adult motor speech disorders.

630. Neurolinguistic Disorders in Children. (3) Sp, Su alt. term

631. Fluency Disorders. (3) F

662. Maxillofacial and Related Disorders of Human Communication. (3) Sp, Su alt. term

685R. Practicum in Speech-Language Pathology and Clinical Audiology. (1-8) F, W, Sp, Su

Prerequisite: consent of instructor.

690R. Seminar in Language Disorders. (3) W

—Speech Pathology. (3) Sp, Su alt. term

—Clinical Data Acquisition. (3) F

—Clinical Data Analysis. (3) W

694R. Special Projects in Speech-Language Pathology or Clinical Audiology. (1-3) F, W, Sp

699R. Thesis. (1-8) F, W, Sp, Su

**DEPARTMENT OF
ELEMENTARY EDUCATION**

Chairman: James W. Dunn, 215 MCKB, 378-4077

Graduate Coordinator: H. Clifford Clark, 217-A MCKB, 378-4676

Faculty/Specialties

Professors

Allred, Ruel A. (1961) Ed.D., University of Oregon, 1965.
Reading, Language Arts Education.

Baird, James E. (1973) Ph.D., University of Utah, 1973.
Supervision.

Black, Harvey B. (1970) Ph.D., Indiana University, Bloomington, 1962. Curriculum and Instruction.

Clark, H. Clifford (1969) Ed.D., Brigham Young University, 1963. Mathematics Education.

Daines, Delva (1955) Ed.D., Washington State University, 1956. Reading Education.

Dunn, James W. (1970) Ed.D., Brigham Young University, 1968. Reading Education.

Harmon, Frank W. (1963) Ed.D., Columbia University, 1964.
Learning Theory

Hollingsworth, Paul M. (1985) Ed.D., Arizona State University, 1964. Reading Education.

Associate Professors

Campbell, Milo Kay (1966) Ph.D., Wayne State University, 1972. Social Studies Education.

Cook, Paul F. (1977) Ph.D., Brigham Young University, 1968.
Elementary Curriculum.

Cutler, Beverly R. (1969) Ph.D., Stanford University, 1966.
Child Development.

Eldredge, J. Lloyd (1981) Ed.D., University of Utah, 1970.
Reading, Language Arts Education.

Harris, R. Carl (1975) Ph.D., Pennsylvania State University, 1971. Elementary Curriculum.

Heil, Lillian H. (1974) Ed.D., Columbia University, 1968.
Children's Literature.

Jacobs, James S. (1976) Ed.D., University of Georgia, 1978.
Children's Literature.

Laird, Robert William (1973) Ed.D., Utah State University, 1971. Supervision, Curriculum Development.

Moore, Blaine H. (1970) Ed.D., Colorado State College, 1969.
Reading, Language Arts Education.

Nelson, Marvin N. (1959) Ph.D., University of Utah, 1975.
Mathematics Education.

Reutzel, D. Ray (1985) Ph.D., University of Wyoming, 1982.
Reading Education.

Tolman, Marvin N. (1975) Ed.D., Utah State University, 1975. Science Education.

Wade, Vern J. (1971) Ed.D., University of Northern Colorado, 1971. Reading Education.

Assistant Professors

Hardy, Garry Ray (1970) Ed.D., University of Houston, 1977.
Research, Curriculum Development.

Quinn, D. William (1978) Ed.D., Western Michigan University, 1978. *Evaluation Theory and Practice*.

Sudweeks, Richard R. (1980) Ph.D., University of Illinois, 1978. *Evaluation Theory and Management*.

Graduate Programs and Degrees

Teaching and Learning (M.A., M.Ed.)

Reading (M.A., M.Ed.)

Reading (Ed.D.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Teaching and Learning (M.A., M.Ed.)

Reading (M.A., M.Ed.)

The M.Ed. programs in Teaching and Learning and Reading provide two options for completing graduation requirements. The student may elect the summer residency program or the regular department program. The summer residency option leads to an M.Ed. degree and consists of a minimum of three full-time summers on the campus, with an intervening supervised field experience during the fall and winter semesters. The on-campus program leads to either the M.Ed. or the M.A. degree and is for those who attend the university as full-time students. Both programs are designed for summer entrance.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: Acceptable scores on verbal and quantitative sections of Graduate Record Examination (GRE). Scores (not to be more than five years old) must be submitted to Department of Elementary Education when applying.
 - C. GPA: Minimum of 3.0 for last 60 hours.
 - D. Successful teaching record: Three years for on-campus reading program and one year for other programs. Completion of three years of elementary teaching before graduation required.
- II. Entry time: Summer term only.

Requirements for Degree

- I. Credit hours (36): Minimum 36 course work hours (38 course work hours for M.A. in reading).
- II. Required courses: Determined in consultation with advisory committee. A maximum of 10 semester hours of approved graduate transfer credit is allowed.
- III. Faculty recommendation upon completion of first summer's work (includes entrance seminar, EIED. 610, and EIED. 672R).
- IV. Residency:
 - A. Regular department program: Two consecutive full-time semesters.
 - B. Summer residency: Minimum three consecutive full-time summer terms with supervised course work during fall and winter semesters for two years.
- V. Thesis (M.A.: 6 hours, EIED. 699R) or professional improvement project (M.Ed.: 2 hours, EIED. 696R).
- VI. Examinations:
 - A. Comprehensive written or oral examination.
 - B. Oral defense of thesis or project.

Reading (Ed.D.)

Admission and Entry

- I. Admission application evaluated by department admission committee. Admission considered according to resources available.
- II. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: Acceptable combined scores on verbal and quantitative sections of Graduate Record Examination (GRE). Scores (not to be more than five years old) must be submitted to Department of Elementary Education when applying.
 - C. GPA: Minimum 3.3 for last 60 hours.
 - D. Successful completion of three years of acceptable professional experience in education. Elementary school teaching experience expected.

Requirements for Degree

- I. Credit hours (95): Minimum 95 hours, including 12 dissertation hours (EIED. 799R). Up to 36 hours from an approved master's degree may apply.
- II. Skill requirements cannot count toward 95 required hours. However, they may be considered if part of approved master's credit. Courses required:
 - ELDR 517: Professional and Scholarly Writing in Education
 - EPsy. 651: Quantitative Reasoning
 - EPsy. 672: Empirical Inquiry in Education
- III. Required courses:
 - A. 36 hours required in reading, including 12 hours of dissertation. A minimum of 12 hours must be taken outside the College of Education or concentrated within another department of the college.
 - B. Remaining hours to be determined in consultation with advisory committee.
- IV. Residency: Two consecutive full-time semester registrations (9 hours each).
- V. Dissertation.
- VI. Examinations:
 - A. Written and oral comprehensive examinations taken upon completion of course requirements.
 - B. Oral defense of dissertation.
- VII. Time limit: Graduate within six years following admission.

ELEMENTARY EDUCATION

GRADUATE COURSES

Note: EIED. 514R and 515R are for certification purposes only and are listed in the BYU General Catalogue.

530. Principles of Learning. (3) Su

Improving classroom learning through understanding underlying psychological principles and theories.

533. Written Expression in the Elementary Schools. (2) Su alt. yr.

Foundation, objectives, and strategies for teaching the writing process to elementary students, including spelling, handwriting, and integration with listening and speaking skills.

540. Reading Foundations. (3) F, Su

Developmental, functional, and recreational reading, with focus on research, literature, and trends in reading instruction.

542. **Beginning Reading.** (2) F, Su

Needs of beginning readers and approaches to teaching young children to read.

610. **Master's Orientation Seminar.** (1) Su

Orientation to master's degree program requirements, emphasizing types of research, development of projects, study of literature, and writing a prospectus.

620. **Organization and Administration of Reading Programs.** (2) Su
alt. yr.

Examining ways to organize and administer school and classroom reading programs. Examining issues relating to program types, reading assessment, grouping, grade level articulation, and supervision.

632. **Science in Elementary Education.** (2) F, Su

Teaching elementary science, current developments and trends. Planning instructional materials and procedures for a science curriculum.

633. **Language Arts in the Elementary School.** (3) Su

Research, literature, and trends in listening, speaking, and writing, with their implications for instruction.

635. **Mathematics in Elementary Education.** (2) Su

Issues, research, and innovations in teaching elementary school mathematics.

636. **Social Studies in Elementary Education.** (2) Su

Domains, methods, and theories of social studies, including innovative content, e.g., law-related education, consumer education, etc.

640. **Literature for Young People.** (2) W, Su

Overview of (primarily) American literature of elementary school pupils; contemporary authors, trends, and classroom applications.

645. **Classroom Reading Diagnosis.** (3) Su

Formal and informal diagnostic procedures for classroom teachers to use in assessing and correcting reading deficiencies.

647. **Reading in the Content Areas.** (2) W, Su

Comprehending and retaining text materials in different subject areas, including study and writing strategies for learning from school texts.

648R. **Practicum in Reading.** (4V) F, Su

Prerequisite: EIEd. 645.

Diagnosing reading difficulties, designing effective teaching strategies, and evaluating effectiveness of instruction.

650. **Technology in Reading and Evaluation of Reading Materials.** (3V) F alt. yr.

Using available software and technology for reading instruction in elementary schools and a critical analysis of print and nonprint materials.

652. **Assessing Learning Outcomes.** (4) W, Su

Selecting and constructing instruments and procedures for assessing affective behavior and cognitive outcomes of education.

660. **Historical Foundations in Reading.** (2) W

An in-depth study of the history of reading education, books, and reading instruction with implications for present-day reading practices.

672R. **Research in Educational Disciplines.** (3V) Su

Research literature in specific educational fields. Emphasizes theory building and designing relevant studies to extend knowledge in the field. Disciplines treated will vary from section to section.

—Research in Teaching and Learning

—Research in Curriculum

676. **Research in Reading.** (2) Su

Prerequisite: EIEd. 540.

Research literature in reading, both classical and current, emphasizing application of findings to educational practice.

680R. **Professional Internship.** (6V) F, W, Sp, Su

Professional work experience in area of specialization under direction of a faculty member.

690. **Master's Colloquium.** (1) Su

Current research and educational studies by faculty and students for collegial critique and analysis.

693R. **Directed Individual Study.** (4V) F, W, Sp, Su

Conceptualizing, designing, implementing, and evaluating student-initiated pursuit of new knowledge in a specified area.

695R. **Independent Research.** (6V) F, W, Sp, Su

Conceptualizing, designing, implementing, and evaluating student-initiated project in a school classroom for curriculum improvement

696R. **Professional Education Project.** (6V) F, W, Sp, Su

Developing, observing, gathering, interpreting, and reporting data derived from a project in relation to the student's professional assignment

699R. **Master's Thesis.** (6V) F, W, Sp, Su

Formal report and defense of substantive research, evaluation, or curriculum project designed to make an original contribution to knowledge in the field

734. **Language Arts Seminar.** (2) On dem.

Significant research and publications in language arts and their implications for classroom practice

740. **The Psychology and Theoretical Processes of Reading.** (2) Su alt. yr.

In-depth study and application of current theoretical models of the reading process; results of classical and contemporary physiological, psychological, and linguistic basic research into the reading process.

780R. **Professional Internship.** (8V) F, W, Sp, Su

Professional work experience in area of specialization under direction of a faculty member.

790R. **Advanced Seminar.** (3V) On dem.

Significant research and publications and their implications to reading instruction.

793R. **Directed Individual Study.** (4V) F, W, Sp, Su

Conceptualizing, designing, implementing, and evaluating student research to extend edge of knowledge in specified educational setting.

795R. **Independent Research.** (6V) F, W, Sp, Su

Conceptualizing, designing, implementing, and evaluating student-initiated research.

799R. Dissertation. (12V) F, W, Sp, Su

Formal report and defense of substantive research, evaluation, or curriculum project designed to make an original contribution to knowledge in the field.

DEPARTMENT OF SECONDARY EDUCATION

Chairman: C. Garn Coombs, 110 MCKB, 378-4905

Graduate Coordinator: Joseph Hugh Baird, 149-F MCKB, 378-3177

Faculty/Specialties

Professors

- Allred, Wallace E. (1956) Ph.D., University of Utah, 1971.
Mathematics Education, Curriculum.
Baird, Joseph Hugh (1963) Ed.D., University of California, Berkeley, 1962. Biological Science, Instruction.
Belt, W. Dwayne (1961) Ed.D., Colorado State College, 1961.
Physical Education, Curriculum.
Clark, D. Cecil (1974) Ph.D., Stanford University, 1965.
Research and Evaluation.
Cranney, A. Garr (1979) Ph.D., University of Minnesota, Minneapolis, 1968. Reading.
Edwards, Clifford H. (1978) Ed.D., University of Utah, 1968.
Biological Science, Curriculum.
Wolfgang, Harold F. (1966) Ph.D., University of Utah, 1964. Foreign Languages, Historical Foundations.

Associate Professors

- Coombs, C. Garn (1971) D.A., Carnegie-Mellon University, 1975. Social Sciences, Curriculum, Foundations of Education.
DeLong, Thomas J. (1979) Ph.D., Purdue University, 1979.
Social Sciences, Career Development.
Kay, Richard S. (1972) Ph.D., Purdue University, Lafayette, 1972. Testing, Evaluation, Music Education.
Rogers, J. Keith (1971) Ph.D., Michigan State University, 1971. Leadership, English Education.

Assistant Professors

- Clemmer, Janice White (1980) Ph.D., University of Utah, 1980. Multicultural Education, Foundations of Education.
Flinders, Neil J. (1978) Ed.D., Brigham Young University, 1968. Historical and Philosophical Foundations.
Green, Edward E. (1972) Ed.D., Indiana University, Bloomington, 1972. Instructional Design.
Williams, David D. (1980) Ph.D., University of Colorado, Boulder, 1981. Naturalistic Evaluation, Research.

Graduate Program and Degree Science Education (M.S.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Science Education (M.S.)

Two options are available—Option 1, a project option; and Option 2, a thesis option.

Option 1—For candidates who have a baccalaureate degree in biology, botany, chemistry, geology, physics, range science, or zoology, and who want a secondary teaching credential.

Admission and Entry

- I. Enrollment is limited; admission decisions will be made by April 30.
- II. Application requirements:
 - A. Deadline: March 30.
 - B. Entrance examinations:
 1. General GRE; minimum score of 1100.
 2. Science Education Writing Test; taken before April 15.
 - C. Interview with three committee members before April 15.
 - D. GPA: Minimum of 3.0; minimum grade of C in major and minor courses.
- III. Prerequisites:
 - A. Baccalaureate degree in biology, botany, chemistry, geology, range science, or zoology.
 - B. ScEd. 276R (section 62 or 64); Hlth. 362.
- IV. Entry times: Summer term and fall semester.

Requirements for Degree

- I. Credit hours (40): Minimum 37 course work hours plus at least 3 project hours (ScEd. 698R).
- II. Required courses: ScEd. 351, 376R (3 hours, Evaluation and Classroom Management), 593R, 601 or 606, 630, 632, 698R; EPsy. 515 (or successful completion of Computers in Education Proficiency Examination); one of ELed. 531, EPsy. 720, or ELDR 531.
- III. Electives: Only 9 hours; may be 300 or 400 level.
- IV. Approved science courses necessary to qualify the student for one of the composite science teaching majors or a teaching major in biology, chemistry, geology, or physics in addition to the minor to meet Utah certification requirements.
- V. Project.
- VI. Examination: Final written.

Option 2—For candidates who hold a secondary teaching credential with a teaching major and minor in science, and who want to increase their knowledge and ability to teach science.

Admission and Entry

Requirements are the same as for Option 1 listed above except for prerequisites—applicants must have a valid secondary science teaching credential.

Requirements for Degree

- I. Credit hours (40): Minimum 34 course work hours plus 6 thesis hours (ScEd. 699R).
- II. Required courses: ScEd. 376R (Classroom Management), 601 or 606, 630, 632, 634, 699R; Phscs. 314; ELDR 661; EPsy. 515 (or successful completion of Computers in Education Proficiency Examination); one of ELed. 531, EPsy. 720 or ELDR 531; additional courses to satisfy deficiencies in multicultural education and a minimum of 12 hours in science.
- III. Electives: Only 9 hours; may be 300 or 400 level.
- IV. Thesis.
- V. Examinations:
 - A. Final written examination.
 - B. Oral defense of thesis.

**SECONDARY EDUCATION
GRADUATE COURSES**

Note: ScEd. 514R is for in-service education purposes only.
Topics are listed in the BYU General Catalogue.

515R. Special Topics in Education. (1–3)

—**Learning and Teaching**

—**Science Education**

—**Middle Education**

531. Effective Classroom Instruction. (2) F, Su

Developing strategies to initiate and to maintain effective learning in elementary and secondary classrooms. Expanding teaching perspectives and acquiring observation skills.

539R. Practicum in Learning and Teaching. (1–8) F, W

Experience in a school setting under direction of college faculty.

601. Structure, Function, and Outcomes of Education. (3)

F, Su Relationships between purposes of education and means selected to achieve those aims. Establishing and maintaining integrity in educational practice.

606. Western Educational Thought and Practice. (3) W, Su

Historical survey of educational thought and practice beginning with the Greco-Roman period.

607. Cultural Foundations of Education. (3) W, Su alt. yr

Exploring common cultural universals from archaic and modern societies to develop skills for learning within a culturally diverse environment.

630. Science Curriculum. (3) F, Sp

Current developments and trends. Planning and testing science curriculum materials.

632. Science Instruction. (3) W, Su

Prerequisite: ScEd. 630.

Teaching science; current developments and trends. Planning instructional materials and procedures for a science curriculum.

634. Evaluation of Science Education. (2) W, Su

Prerequisite: ScEd. 630.

Evaluating pupil learning, instruction, and curriculum materials.

649. College and Adult Basic Reading. (2) W, Sp

Prerequisite: one course in reading or consent of instructor.

Adult basic education programs; advanced work in community college and university reading services.

660. Historical Foundations in Reading. (2) W

An in-depth study of the history of reading education, books, and reading instruction with implications for present-day reading practices.

693R. Directed Individual Study. (1–4) F, W, Sp, Su

698R. Master's Project. (1–6) F, W, Sp, Su

699R. Master's Thesis. (1–6) F, W, Sp, Su

COLLEGE OF ENGINEERING AND TECHNOLOGY

Dean: L. Douglas Smoot, Professor, Chemical Engineering (270 CB)

Associate Dean, Graduate Studies: S. Olani Durrant, Associate Professor, Civil Engineering (270 ASB)

Associate Dean, Research: E. Max Raisor, Professor, Design Engineering Technology (270 CB)

The College of Engineering and Technology consists of six academic departments:

- Chemical Engineering
- Civil Engineering
- Electrical and Computer Engineering
- Industrial Education
- Mechanical Engineering
- Technology

Each department offers graduate programs. The four engineering departments offer master of science, master of engineering management, and doctor of philosophy degrees; the Industrial Education Department offers the master of science degree; and the Technology Department offers master of science in computer-integrated manufacturing and master of technology management degrees.

Detailed descriptions of these degree programs appear below and in the various department sections. BYU undergraduate students may begin graduate study before obtaining their baccalaureate degree through enrollment in the integrated master's program.

The departments offer financial aid in the form of scholarships and internships. In addition, research programs fund assistantships and research associates. For more information about these awards, consult individual departments.

GRADUATE PROGRAMS

Master of Engineering Management and Master of Technology Management

The master of engineering management (MEM) program and the master of technology management (MTM) programs are designed to assist graduates from the engineering and technology departments to obtain an education that will enhance their ability to move into technical management. The program includes a significant commitment to advanced engineering training, advanced technology training, and management skills that will be useful in entry-level technical management.

Minimum requirements include a B.S. degree in engineering or technology or enrollment in an integrated master's program (with the expectation of completing a B.S. degree by December of the year of entry and the ability to include required management courses taught during the term or semester of entry).

Entrance is competitive and the program is limited to 40 students. Scholarship funds are available from the Jerry Christiansen scholarship funds.

Students should apply for graduate work in their major department and indicate in their statement of intent their wish to be considered for the management program. The usual university graduate deadlines apply.

The basic curriculum requirements are:

Spring term:	EST 503 (3), technical course (3)
Summer term:	Mgt. 551 (3), MBA 561 (2), technical courses (3)
Fall semester:	Mgt. 501 (3), 561 (3), EST 500 (1), technical courses (6)
Winter semester:	Mgt. 511 (3), 541 (3), 562 (3), EST 501 (1), technical courses (3)

Master of Science

Each department offers one or more master of science programs. Some are thesis programs, others project programs, and others course work only programs. The total number of hours required varies from 34 to 40 depending on the program. More detailed descriptions of program requirements are included in the department sections. As a minimum, candidates for a master of science degree must have earned a B.S. degree in an appropriate field or be enrolled in an integrated master's program.

Integrated Master's Program

Students who desire to obtain a master's degree in engineering, and who have been accepted to a department professional program, may elect to enter the integrated master's program at the end of the sophomore year or during the junior year of the engineering curriculum. The purpose of the program is to afford greater flexibility in scheduling course work than is normally available through a traditional B.S. degree followed by an M.S. degree program. In this program the B.S. degree may be received before or simultaneously with the M.S. degree (normally five years from freshman matriculation).

Refer to the department sections of this catalogue for more details regarding this program, and consult with the specific department of interest for procedures, application forms, and other details.

Ph.D. Program in Engineering

Requirements for this degree are described in the department sections of this catalogue.

Residence Requirements

The major part of the work toward the master of science thesis and the doctor of philosophy dissertation must be completed under the specific direction of a graduate faculty member while the student is in residence at BYU. *In residence* is defined as: (1) being registered for credit as a graduate student and (2) living and conducting research in the general vicinity of the university, where the faculty member has ready access to research facilities and consultation between the student and faculty member is unencumbered. Further, all work applying toward any master's project, thesis, or doctoral dissertation must be completely open for university review and publication. Any exceptions to the above must be supported by written approval from the department and college and obtained in advance of any work being performed. See the general requirements section of the catalogue for more details concerning the university's residency requirements.

RESEARCH CENTERS, LABORATORIES, AND OTHER FACILITIES

The College of Engineering and Technology has experienced rapid growth in funded research during the past decade. In recent years the college research budget has had an average annual growth of more than 30 percent, the budget for the 1987-88 fiscal year exceeded \$8 million. A national leader in several areas, college research organizations now have two centers, including one of the prestigious National Science Foundation engineering research centers, five research laboratories, and three state-funded centers of excellence. More than half the faculty participate in research endeavors, and a number have gained international recognition for their work. The college presently enrolls nearly 300 graduate students, some 70 of whom are in doctoral programs.

Advanced Combustion Engineering Research Center (ACERC)

Nationally recognized as a leading center for interdisciplinary combustion research, the National Science Foundation (NSF) recently identified BYU as the site for one of only 13 NSF-sponsored engineering research centers. Selected from among more than 100 applicants, this center has secured significant additional financial support from U.S. corporations. The center is under the direction of L. Douglas Smoot, dean of the college. Students and faculty associated with the center pursue experimentation, analysis, computer modeling, and design of combustion systems. The center is designated as a state center of excellence and as such has received additional financial support from the state of Utah.

ACERC funds several research assistantships for graduate students and research associates each year. Current key areas of research emphasis include: (1) fuels structure and their reaction rates; (2) behavior of fuel minerals; (3) formation and control of pollutants; (4) turbulence and its interactions with chemical reactions; (5) comprehensive modeling of combustion systems; and (6) combustion process characteristics.

CAM (Computer-aided Manufacturing) Software Research Center (CSRC)

Begun as a laboratory in 1975 by Dell K. Allen, Kay F. Brown, and Wilford J. Tolman, the purpose of CSRC is to fulfill a national need for improved methods to integrate design and

manufacturing and to enhance quality and productivity. Significant developments over the years have included design of integrated manufacturing architecture models, the CIM data base, a universal machine control system, the DCLASS rule-based expert system, and an extensive set of training modules containing the manufacturing knowledge base.

CSRC has been identified as a state center of excellence in computer-integrated manufacturing. Under this program, CSRC is working closely with industry to transfer research into applications. Present research is focused on the creation of a CIM factory design system which will incorporate strategic, business, and marketing plans into the factory design process. A three-level factory architecture model has been defined that incorporates management, technical support, and factory operations. Group technology, modeling, analysis and simulation, just-in-time strategies, relational data base technology, and real-time shop floor concepts are incorporated in the overall design philosophy.

Catalysis Laboratory

Headed by Calvin Bartholomew, the BYU Catalysis Laboratory has a 14-year history of productive research in heterogeneous catalysis. This research is highly interdisciplinary in nature as it applies principles of kinetics, chemistry, materials science, surface science, and chemical engineering to the understanding of catalyst properties and catalytic reactions.

The Catalysis Laboratory is housed in the Chemical Engineering Department. Its principal objectives are to: (1) obtain a basic understanding of catalyst functions and their relationships to catalyst structure in energy and air-pollution-related processes; (2) develop new methods and tools for catalyst study; and (3) train and educate students in the science and art of catalysis research. Present research efforts are focused on basic research in catalytic adsorption, supported metal catalysis, catalyst preparation, catalyst characterization, coal characterization and oxidation, and catalyst deactivation.

Combustion Laboratory

Organized in 1977 to bring together faculty who shared common research interests, the Combustion Laboratory maintains one of the most active and extensive combustion programs in the United States. This laboratory provided the basis for the creation of ACERC, and it continues to function as an important part of that organization. Research activities are broad and well funded and presently include coal combustion, pollutant formation, coal gasification, turbulent mixing, dust explosions, and the modeling of gaseous and particle-laden combustion processes. Direction is given to the Combustion Laboratory by Dean Smoot as part of his activities with ACERC.

Engineering Computer Graphics Laboratory (ECGL)

This laboratory was formalized in 1985 following a decade of research and development in computer graphics under the leadership of Henry N. Christiansen of the Civil Engineering Department. During that period the faculty and graduate students associated with the lab have created computer graphics and structural analysis software that has been distributed worldwide.

The laboratory maintains a sizeable array of hardware that equips the comprehensive computer graphics research facility. Laboratory objectives include the promotion of an atmosphere of academic research related to computer-aided engineering and

the development of procedures and computer codes, with special emphasis on computer graphics.

Engineering Design Methods Laboratory (EDML)

EDML was formed by an interdisciplinary group of faculty and graduate students whose common interest is the development of strategies, software tools, and understanding for increased productivity in engineering design. EDML is housed in the Mechanical Engineering Department under the direction of Alan R. Parkinson. Researchers associated with the laboratory emphasize the study of generalized methods to attack a wide range of design problems. Included among these are strategies for designing complex systems, software systems for engineering design, design/manufacturing interfaces, shape optimization in design, and modeling of systems for design. The laboratory has developed OPTDES.BYU, a software system that brings constrained optimization algorithms and analysis software together so that the design engineer can quickly explore highly dimensional design space, focus on synthesis rather than analysis, and achieve optimum designs.

Integrated Systems Laboratory (ISL)

The Integrated Systems Laboratory was created in the Technology Department for researching integrated, interdisciplinary solutions to complex implementation problems in design and manufacturing systems. Hardware and software issues related to systems automation, and management strategies coupled with human factors and socio-economic considerations are the primary focus of work done in this laboratory. Industrial support from various leading CAD/CAM/CIM systems vendors has provided ISL with an elaborate hardware and software platform. Correlated industrial research and development contracts have produced a spectrum of applications challenges that allow graduate students direct involvement in integration problem solutions.

Digital Signal Processing

During the past decade two professors of electrical engineering, Douglas M. Chabries and Richard W. Christiansen, have developed a comprehensive digital signal processing research program. In 1986 the state of Utah designated the program a center of excellence. This research effort includes image processing, particularly directed toward advancing techniques for transmitting compressed digital images; speech processing with application to digital signal processing in hearing aids, robotics, speech synthesis and analysis; and the design and development of design tools for VLSI.

Facilities include extensive computer resources, signal processing software tools, image display and digitizing equipment, and a sound room. All computer systems are interfaced through several parallel networks, thus permitting researchers to bring the latest capabilities to bear in their work.

Facilities

Research facilities in the College of Engineering and Technology are broad and sophisticated. Each of the previously identified centers and laboratories is well equipped with the latest research implements. In addition to equipment procured or fabricated to fulfill research obligations, industrial partners have contributed some \$20 million of equipment over the past half dozen years. This has created an environment which has fostered increased research endeavors and provided students with access to the very

latest hardware. Generous laboratory and office space provides graduate students with an ideal environment in which to pursue their scholarly efforts. Close cooperation with industry and governmental agencies has assured that the research activities are on the forefront of national needs, and BYU engineering researchers have gained a reputation for producing ideas, strategies, and software that have immediate application.

Information regarding other research efforts not described in this section may be found in the various departmental publications.

Student Study and Research Areas

Nearly all graduate students have personal laboratory areas, offices, or cubicles.

DEPARTMENT OF CHEMICAL ENGINEERING

Chairman: Douglas N. Bennion, 350 CB, 378-2586
Graduate Coordinator: Paul O'Dell Hedman, 350-N CB, 378-6238

Faculty/Specialties

Professors

- Bartholomew, Calvin H. (1973) Ph.D., Stanford University, 1972. Catalysis.
- Beckstead, Merrill W. (1977) Ph.D., University of Utah, 1965. Combustion on Solid Propellants.
- Bennion, Douglas N. (1980) Ph.D., University of California, Berkeley, 1964. Electrochemical Engineering.
- Hanks, Richard W. (1963) Ph.D., University of Utah, 1960. Fluid Mechanics.
- Hedman, Paul O'Dell (1977) Ph.D., Brigham Young University, 1973. Combustion/Gasification, Fossil Energy, Reacting Flows, Chemical Propulsion.
- Smoot, L. Douglas (1967) Ph.D., University of Washington, 1960. Combustion, Coal Gasification.
- Terry, Ronald E. (1987) Ph.D., Brigham Young University, 1976. Enhanced Oil Recovery, Thermodynamics, Calorimetry, Process Control.

Associate Professors

- Rowley, Richard (1984) Ph.D., Michigan State University, 1978. Liquid-Mixture Transport Properties, Thermodynamics, Statistical Mechanics.
- Smith, Philip (1982) Ph.D., Brigham Young University, 1979. Combustion and Transport, Processes in Reacting Flow Systems, Computer Modeling.
- Solen, Kenneth A. (1976) Ph.D., University of Wisconsin, Madison, 1974. Blood-Material Interactions, Blood Filtration, Microvascular Blood Flow.

Assistant Professors

- Harb, John N. (1988) Ph.D., University of Illinois, Urbana, 1988. Electrochemical Engineering.
- Hecker, William C. (1982) Ph.D., University of California, Berkeley, 1982. Catalysis, Chemical Kinetics, Fluidization, Coal and Oil Desulfurization, Auto Emissions Control.

Oscarson, John L. (1974) Ph. D., University of Michigan, Ann Arbor, 1985. Vapor-Liquid Equilibria, Separation Processes, Corrosion.

Pitt, William G. (1987) Ph. D., University of Wisconsin, Madison, 1987. Surface Chemistry, Blood-Surface Interactions, Protein Adsorption.

Graduate Programs and Degrees

Chemical Engineering (M.S.)

Engineering Management (MEM)

Engineering (Ph. D.)

Areas of Specialization

Catalysis, fluid mechanics, calorimetry, transport properties, blood material interactions, electrochemistry, combustion.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

Integrated Master's Program

See the College of Engineering and Technology section of this catalogue for a description of the integrated master's program in engineering. Special requirements for this program are basically the same as those for the M.S. degree in Chemical Engineering but include the following:

- I. Application requirements:
 - A. Formal application for admission submitted to the Office of Graduate Studies before completion of the final 34 hours of combined graduate and undergraduate course work.
 - B. Cumulative GPA of 3.2 or higher at end of sophomore year.
- II. Degree requirements:
 - A. Cumulative GPA of 3.0 or above in *all* master's degree courses.
 - B. Submission of a final study list during first semester of registration as a graduate student that specifies all technical elective courses.

PROGRAM AND DEGREE REQUIREMENTS

Chemical Engineering (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examinations:
 1. None for applicants who hold a B.S. from U.S. and Canadian schools.
 2. International applicants must submit general GRE and advanced engineering subject test as well as TOEFL scores.
- II. Prerequisite: B.S. degree (or equivalent) in chemical engineering from a school accredited by the American Institute of Chemical Engineers. B.S. degree in other engineering fields, chemistry, physics, material science, or metallurgy requires provisional admission.
- III. Entry times: U.S. applicants all terms and semesters; international applicants fall semester only. In addition, applicants with a B.S. in a major other than chemical engineering must apply for summer term and arrive two weeks before the term begins.

Requirements for Degree

- I. Credit hours (34): Minimum 34 hours including 6–9 thesis hours (ChEn. 699R).

- II. Required courses: ChEn. 531, 533, 535, 691R (every semester) and electives (15–18 hours). For requirements of special programs, see departmental brochure.
- III. Residence: See preceding college section.
- IV. Prospectus: Students must submit a written prospectus on proposed thesis topic.
- V. Thesis.
- VI. Examinations:
 - A. Preliminary examination on undergraduate engineering course work to be taken and passed at the beginning of the graduate program. The examination is offered once a year at the beginning of winter semester.
 - B. Oral defense of thesis.

Engineering Management (MEM)

See the College of Engineering and Technology section of this catalogue for a description of the interdisciplinary program in engineering management. The following section lists requirements specific to chemical engineering.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examinations:
 1. None for applicants who hold a B.S. degree from U.S. or Canadian schools.
 2. International applicants must submit general GRE and engineering subject test as well as TOEFL scores.
 - C. Indicate in the statement of intent a desire to be considered for the program.
- II. Prerequisite: B.S. degree in engineering (or anticipated December graduation of that year and the ability to enroll in the required semester hours of management courses in the fall semester).
- III. Entry times: U.S. applicants all terms and semesters; international applicants fall semester only. In addition, applicants with a B.S. in a major other than chemical engineering must apply for summer term and arrive two weeks before the term begins.

Requirements for Degree

- I. Credit hours (40): Minimum 40 course work hours.
- II. Required courses: ChEn. 531, 533, 535, 691R, and electives described in the college section above.
- III. Residence: See preceding college section.
- IV. Examination: Students must take and pass a comprehensive examination (preliminary examination) on undergraduate engineering course work at the beginning of the graduate program. The examination is offered once each year at the beginning of winter semester.
- V. Consult department for additional requirements.

Engineering (Ph. D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examinations:
 1. None for applicants who hold a B.S. or M.S. degree from U.S. or Canadian schools.
 2. International students must submit general GRE and advanced engineering subject test as well as TOEFL scores.

- II. Prerequisite: B.S. degree (or equivalent) in chemical engineering from a school accredited by the American Institute of Chemical Engineers. B.S. degree in other engineering fields, chemistry, physics, material science, or metallurgy requires provisional admission.
- III. Entry times: U.S. applicants all terms and semesters; international applicants fall semester only. In addition, applicants with a B.S. in a major other than chemical engineering must apply for summer term and arrive two weeks before the term begins.

Requirements for Degree

- I. Credit hours (68): Minimum of 50 course work hours beyond the baccalaureate degree plus 18 dissertation hours (ChEn. 799R).
 - A. Candidates without a master's degree: Minimum of 41 hours of graduate-level courses, 9 hours of advanced mathematics or science (300 level or higher), and a minimum of 18 hours of dissertation (ChEn. 799R).
 - B. Candidates with a master's degree: With advisory approval, up to 20 hours of previous graduate work, including 4 hours of thesis, may apply. Other courses taken in the master's program may apply toward the 9 hours of advanced mathematics or science requirement.
- II. Required courses: ChEn. 531, 533, 535, 791R (every semester), 9 hours of advanced mathematics, and 30 hours of elective courses.
- III. Preliminary examination: Students must take and pass a comprehensive examination on undergraduate course work at the beginning of the graduate program. The examination is offered once each year at the beginning of winter semester.
- IV. Language or skill requirement: Demonstrate a thorough familiarity with French, German, Russian, or Spanish; or a moderate familiarity with any two of the languages; or a moderate ability in one of the languages and 8–10 hours in statistics, computer science, or mathematics; or 18–21 hours of integrated study in mathematics beyond college trigonometry (Math. 111 at BYU). The advanced mathematics and science requirement referred to in I-A above is in addition to this skill requirement.
- V. Residence: See the preceding college section.
- VI. Prospectus: Students must submit a written prospectus on their proposed dissertation research topic and successfully defend the prospectus.
- VII. Dissertation.
- VIII. Examination: Oral defense of dissertation.

Combustion Engineering Minor

- I. Credit hours:
 - A. Master's level: 9 hours.
 - B. Doctoral level: 12 hours.
- II. Required courses: ChEn. 533, 591R (each semester in residence), 633, 733.
- III. Electives: Select from Chem. 759R, ChEn. 561, 641, 693R.
- IV. Research in combustion-related area.
- V. Examination: Comprehensive examination.

CHEMICAL ENGINEERING GRADUATE COURSES

- 500. Creative Skills in Chemical Engineering. (1) F
Applying creativity and prior course work to the solution of relevant open-end problems.
- 518. Biomedical Engineering Principles. (3) W alt. yr.
Prerequisite: ChEn. 376, Math. 214.
Applying chemical engineering principles to physiologic systems and medical problems.
- 531. Thermodynamics of Multicomponent Systems. (3) F
Prerequisite: ChEn. 373 or Chem. 461.
Fundamental concepts and applications in first and second laws, equilibrium and stability, phase equilibrium, homogeneous and heterogeneous chemical equilibrium.
- 533. Transport Phenomena. (3) F
Concurrent registration: ChEn. 476. Recommended: Math. 323.
Field equations for momentum, heat, and mass transport. Transport coefficients; application to system design.
- 534. Advanced Separations. (3) W alt. yr.
Prerequisite: ChEn. 533, Math. 321.
General theory of differential and stagewise diffusional and separation operations; multicomponent distillation, extraction, absorption; solution of complex problems; column design and instrumentation.
- 535. Kinetics and Catalysis. (3)
Prerequisite: ChEn. 478.
Theories and principles of chemical kinetics. Heterogeneous catalysis and reactor design.
- 536. Digital Process Control. (2) F
Prerequisite: ChEn. 336.
Computer application of advanced control algorithms on actual chemical processes.
- 541. Computer Design Methods. (2) W alt. yr.
Prerequisite: Math. 311, ChEn. 376.
Computer-aided design and numerical methods of chemical engineering processes.
- 561. Instrumental Analysis of Fossil Fuels. (3) F
Prerequisite: Chem. 461.
Spectroscopic, chromatographic, and other instrumental techniques for identifying and analyzing fossil fuels and related materials.
- 583. Nuclear Reactor Engineering. (3) W on dem.
Prerequisite: ChEn. 412.
Nuclear reactor design, including heat transfer, energy conversion, reactor materials, instrumentation and control, fuel management, economics, and comparison of principal power system concepts.
- 591R. Combustion Seminar. (0.5) F, W
Combustion-related technical presentations by faculty and invited speakers.
- 619. Electrochemical Engineering Fundamentals. (3) W alt. yr.
Prerequisite: ChEn. 376, 478.
Thermodynamics, transport phenomena, chemical kinetics, and systems analysis. Applications to corrosion, electrolysis, batteries, and water quality.

631. **Applied Statistical Mechanics.** (3) W alt. yr.
Prerequisite: Chem. 461; ChEn. 531 or equivalent.

Fundamentals of statistical mechanics and their application to calculating thermodynamic and transport properties of fluids and fluid mixtures.

633. **Combustion Processes.** (3) W
Prerequisite: ChEn. 533 or equivalent.

Fundamentals of transport processes in reacting flow systems with specific applications of various combustion processes.

635. **Advanced Topics in Catalysis and Kinetics.** (3) Sp alt. yr.
Prerequisite: ChEn. 535, Math. 321.

Specialty topics in catalysis and kinetics, including catalyst deactivation, catalyst characterization, reactor design, and reaction modeling.

641. **Combustion Modeling.** (3) F alt. yr.
Prerequisite: ChEn. 633, Math. 415.

Theory of combustion systems and quantitative procedures for computing performance of combustion chambers. Applications include turbulent combustion of gases, sprays, and particulates.

672. **Advanced Fluid Mechanics.** (3) W
Prerequisite: ChEn. 374 or equivalent. Recommended: Math. 323.

Application of field equations to the description of complex flow configurations and non-Newtonian flow.

674. **Advanced Thermodynamics.** (2) F on dem.

Advanced thermochemistry applied to measurement of heats of mixing, heat of reaction, equilibrium constant, etc.

685. **Chemical Engineering for Chemistry Students.** (6) Su
Material and energy balances, fluid flow, and heat transfer.

691R. **Seminar for Master's Students.** (0.5) F, W
Technical presentations by graduate students, faculty members, and guests.

693R. **Special Topics—Graduate.** (1–6) F, W, Sp, Su on dem.

697R. **Special Problems—Graduate.** (2–6) F, W, Sp, Su

698R. **Master's Project.** (1–6)

699R. **Master's Thesis.** (1–6) F, W, Sp, Su

711. **Advanced Environmental Analysis.** (3)
Prerequisite: consent of instructor.

Advanced concepts in environmental engineering related to combustion with emphasis on the technology affecting the formation and control of SO_2 and NO_x . (Taught by the University of Utah.)

733. **Coal Combustion.** (3) F alt. yr.
Prerequisite: ChEn. 633, Math. 323.

Fundamentals of coal combustion and gasification processes, including particle mechanics, devolatilization, heterogeneous oxidation, radiative heat transfer, and combustion of coal in practical flames.

743. **Properties and Reactions of Coals.** (3)
Prerequisite: consent of instructor.

Study of the structures, reactions, and properties of coal and coke. (Taught by the University of Utah.)

791R. **Seminar for Doctoral Students.** (0.5) F, W

793R. **Selected Topics in Chemical Engineering.** (1–3) F, W, Sp, Su on dem.

Topics vary according to student-faculty research interests.

799R. **Doctoral Dissertation.** (1–9) F, W, Sp, Su

DEPARTMENT OF CIVIL ENGINEERING

Chairman: LaVere B. Merritt, 368-C CB, 378-2811

Graduate Coordinator: A. Woodruff Miller, 368-K CB, 378-6331

Faculty/Specialties

Professors

Benzly, Steven Edward (1980) Ph.D., University of California, Davis, 1971. Structural Mechanics.

Budge, W. Don (1964) Ph.D., University of Colorado, Boulder, 1964. Transportation and Materials.

Christiansen, Henry N. (1965) Ph.D., Stanford University, 1962. Structural Mechanics and Computer Graphics.

Merritt, LaVere B. (1970) Ph.D., University of Washington, 1970. Environmental and Water Resources.

Miller, A. Woodruff (1974) Ph.D., Stanford University, 1975. Hydrology and Water Resources.

Wilson, Arnold (1957) Ph.D., Oklahoma State University, 1973. Structures and Concrete.

Associate Professors

Balling, Richard J. (1982) Ph.D., University of California, Berkeley, 1982. Structural Mechanics.

Durrant, S. Olani (1970) Sc.D., New Mexico State University, 1969. Structures and Structural Mechanics.

Goodwin, Reese J. (1967) Ph.D., University of Utah, 1976. Structures.

Stephenson, Michael B. (1980) Ph.D., Brigham Young University, 1976. Structural Mechanics.

Thurgood, Glen S. (1967) Ph.D., Texas A&M University, 1975. Traffic and Transportation.

Wallace, Lynn P. (1983) Ph.D., West Virginia University, 1970. Water Resources and Surveying.

Youd, T. Leslie (1984) Ph.D., Iowa State University, 1967. Geotechnical Engineering.

Assistant Professors

Borup, M. Brett (1987) Ph.D., Clemson University, 1985. Environmental Engineering.

Nay, Bruce J. (1984) Ph.D., Brigham Young University, 1981. Structural Mechanics and Computer Graphics.

Rollins, Kyle M. (1987) Ph.D., University of California, Berkeley, 1987. Geotechnical Engineering.

Sederberg, Thomas W. (1978) Ph.D., Purdue University, 1983. Structural Mechanics.

Graduate Programs and Degrees

Civil Engineering (M.S.)

Engineering Management (MEM)

Engineering (Ph.D.)

Areas of Specialization

Geotechnical engineering, structures and structural mechanics, transportation engineering, water resources and environmental engineering, engineering management (MEM degree only).

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

Integrated Master's Program

See the College of Engineering and Technology section of this catalogue for a description of the integrated master's program in engineering. Special requirements for this program are basically the same as those for the M.S. degree in Civil Engineering but include the following:

- I. Application requirements:
 - A. Formal application for admission submitted to the Office of Graduate Studies before completion of final 30 hours of graduate degree.
 - B. Cumulative GPA of 2.5 or better in civil engineering program at end of sophomore year.
- II. Degree requirements:
 - A. Cumulative GPA of 3.0 or above in all master's degree courses.
 - B. Submission of final study list during first semester of registration as a graduate student.

PROGRAM AND DEGREE REQUIREMENTS**Civil Engineering (M.S.)****Admission and Entry**

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE for applicants from non-ABET (Accreditation Board for Engineering and Technology, Inc.) accredited institutions.
- II. Prerequisite: Baccalaureate degree in civil engineering or its equivalent (students with other backgrounds will also be considered). Student will be required to make up any deficiencies.

Requirements for Degree

- I. Credit hours (34 minimum):
 - A. Thesis program: 34 minimum approved hours including 6–9 thesis hours (CivE. 699R).
 - B. Project program: 34 minimum approved hours including a maximum of 3 project hours.
 - C. Course work only program: 34 minimum approved hours.
- II. Required course: CivE. 691R each fall and winter semester; no more than 1.0 hour can count toward the minimum hours required. Consult department for details.
- III. Residence: See preceding college section.
- IV. Examinations:
 - A. Comprehensive examination at the beginning or end of course work.
 - B. Oral defense of thesis.

Master of Engineering Management (MEM)

See the College of Engineering and Technology section of this catalogue for a description of the interdisciplinary program in engineering management. The following section lists requirements specific to civil engineering.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE for applicants from non-ABET (Accreditation Board for Engineering and Technology, Inc.) accredited institutions.

C. Indicate in statement of intent desire to be considered for program.

- II. Prerequisite: Baccalaureate degree in engineering or technology.
- III. Entry times: Spring and summer terms and fall semester.

Requirements for Degree

- I. Credit hours (40): Minimum 40 course work hours.
- II. Basic curriculum requirements: See preceding college section.
- III. Examination: Successful completion of the fundamentals examination (FE), formerly the engineering-in-training (EIT) examination, or a special examination prepared by the department.
- IV. Residence: See preceding college section.
- V. Consult department for additional requirements.

Engineering (Ph.D.)**Admission and Entry**

- I. Deadlines: University deadlines apply.
- II. Entrance examination: General GRE for applicants from non-ABET (Accreditation Board for Engineering and Technology, Inc.) accredited institutions.
- III. GPA: Minimum 3.4 required.

Requirements for Degree

- I. Credit hours (68): Minimum of 68 hours beyond the baccalaureate degree, including 18 hours of dissertation (CivE. 799R).
 - A. Candidates without master's degree: Minimum of 38 hours of graduate level courses, 12 hours of advanced mathematics or science (300 level or higher), and a minimum of 18 hours of dissertation (CivE. 799R).
 - B. Candidates with master's degree: With advisory committee approval, up to 20 hours of previous graduate course work, including 4 hours of thesis, may apply. Other courses taken in the master's program may apply toward the 12 hours of advanced mathematics or science requirement.
- II. Required course: CivE. 691R each fall and winter semester; no more than 2 hours can count toward minimum hours required.
- III. Skill requirement: 18–21 hours of integrated study in mathematics beyond college trigonometry (Math. 111 at BYU), statistics, or computer science. The advanced mathematics and computer science requirement referred to above is in addition to this skill requirement.
- IV. Residence: See preceding college section.
- V. Prospectus: Must be submitted and successfully defended at least one year before completion of the degree.
- VI. Dissertation.
- VII. Examinations:
 - A. Final comprehensive examination.
 - B. Oral defense of dissertation.

CIVIL ENGINEERING GRADUATE COURSES**503. Continuum Mechanics. (3) F**

Prerequisite: CivE. 203, 332, or equivalent; Math. 321.

Tensor notation, stress and deformation tensors, constitutive equations for solids and fluids, field equations, example problems with Newtonian fluids and Hookean solids.

505. Concrete—Its Materials, Uses, and Properties. (3) F
Prerequisite: consent of instructor.

Manufacturing and testing of cements; concrete materials and concrete mix design; techniques of concrete handling, placing, and treatment; laboratory work.

513. Photogrammetry and Remote Sensing. (3) Sp
Prerequisite: CivE. 113.

Using data obtained from visible portion (photographs) and broader range (radiometers, radar, microwaves, infrared, remote, etc.) of electromagnetic spectrum to solve engineering problems. Maps, mapping procedures, and photo and electronic data interpretation.

522. Matrix Structural Analysis. (3) F
Prerequisite: CivE. 321.

Matrix notation and computer subroutines, principle of virtual forces, flexibility method, principle of virtual displacements, stiffness method, and general purpose computer programs for structural analysis.

523. Finite Element Method. (3) W
Prerequisite: CivE. 503, 522, or consent of instructor.

Finite element stress analysis; simplex, isoparametric, bending, and axisymmetric elements; mathematical foundations of finite element method; application to fluid and thermal problems; state-of-the-art computer software and hardware.

524. Design of Bridge Structures. (3) F
Prerequisite: CivE. 423, 424, 441, 522.

Design of bridge floor systems, composite design, and continuous beam and girder bridges. Piers, abutments, and bridge bearings. Field trips to observe bridge construction and fabrication.

526. Prestressed Concrete. (3) W
Prerequisite: CivE. 522, 424.

Basic theory, pre- and post-tensioning methods. Details of design and fabrication applications to continuous structures.

529. Timber Design. (3) Su
Prerequisite: CivE. 321.

Composition of wood; timber species and grades, beam design, straight and tapered glue-lam girder design, columns, connections, trusses, shear walls, structural systems in timber.

531. Water Resources Engineering. (3) F
Prerequisite: CivE. 431, 433.

Advanced hydrologic and hydraulic principles in planning and designing irrigation, drainage, flood control, and other water resource facilities.

535. Hydraulic Design of Channels and Control Structures. (3) W
Prerequisite: CivE. 431, 433.

Design of water conveyance channels and control structures, including siphons, chutes, weirs, flumes, dams, spillways, and outlet works.

542. Foundation Engineering. (3) W
Prerequisite: CivE. 441.

Integrating soil mechanics and structural design to elementary structures, including spread footings, combined footings, mat foundations, retaining walls, pile foundations, and caissons.

543. Earth- and Rock-Fill Structures. (3) W
Prerequisite: CivE. 441 or equivalent.

Design and construction of earth and rock-fill dams, selecting dam sites and materials, seepage and pore pressure studies, shearing strength data, stability analysis, and construction controls.

545. Geotechnical Analysis of Earthquake Phenomena. (3) W
Prerequisite: CivE. 321, 441.

Earthquake potential, magnitude and intensity; design ground motions, elementary dynamics of structures; response spectra; building code provisions; liquefaction and ground failure.

550. Water Quality Management. (3) W
Prerequisite: consent of instructor.

Philosophies, objectives, and methods of water quality management, impact of various uses of water quality, behavior of pollutants in receiving waters.

555. Sanitary Engineering Analysis. (3) F
Prerequisite: CivE. 351 or equivalent.

Techniques for chemical and biological analysis of the major organic and inorganic constituents of water, sewage, and industrial wastes.

561. Geometric Design of Highways. (3) F
Prerequisite: CivE. 361.

Designing visual aspects of highways. Highway classification, design controls and criteria, and design elements. Vertical and horizontal alignment, cross sections, intersections, and interchanges. Capacity analysis.

562. Traffic Engineering: Characteristics and Operations. (3) F
Prerequisite: CivE. 361 or equivalent.

Traffic flow theory, traffic operations, traffic studies; driver, vehicle, and roadway characteristics; parking facilities, at-grade intersections; channelization; traffic control devices; signal studies and design.

563. Pavement Design. (3) W
Prerequisite: CivE. 361.

Properties and selection of pavement components including soils, stabilized soil, base, subbase, subgrade, and bituminous materials. Design of rigid and flexible pavements.

565. Transportation in Urban Planning. (3) W
Prerequisite: consent of instructor.

Transportation in urban development. Street classification and function. Design elements of streets, intersections, and access drives. Transportation planning studies. Land use transportation interrelationships. Improvement alternatives.

615. Dynamic and Nonlinear Structural Analysis. (3) Sp
Prerequisite: CivE. 204, 522, or consent of instructor, Math. 321.

Dynamic analysis of single and multi-degree-of-freedom structures; Ritz approximation; frequency domain analysis; geometric nonlinearity; material nonlinearity; seismic structural analysis; evaluation of building code seismic provisions.

621. Design of Thin Shell Structures. (3) F
Prerequisite: CivE. 424, 522.

Analysis of domes, cylindrical, folded plate, and hyper shells; designing typical structures of reinforced concrete.

625. **Design of Multistory Structures.** (3) W
Prerequisite: CivE. 441, 522, 423, 424, or consent of instructor.

Shear walls, floors, columns, frames, and foundations, using elastic and plastic methods. Frame response to lateral forces.

641. **Advanced Soil Mechanics.** (3) F
Prerequisite: CivE. 441.

Theory of elasticity applied to soil, stress distribution in earth masses, strength theories, shearing strength, soil consolidation theory, settlement analysis, stability of slopes, bearing capacity of soils.

644. **Advanced Foundation Engineering.** (3) F
Prerequisite: CivE. 641.

Dewatering problems; shallow, pile, caisson, and machine foundations; foundations on collapsible and expansive soils; liquefaction under seismic activity.

646. **Flow of Fluids Through Porous Media.** (3) F
Prerequisite: CivE. 441.

Steady state fluid flow in soils, confined and unconfined transient flow in soils, subsurface drainage, design of subsurface dams.

650. **Unit Operations and Processes.** (3) F
Prerequisite: CivE. 433.

Water and wastewater applications of unit operations and processes.

651. **Water Treatment Facilities Design.** (3) W
Prerequisite: CivE. 650.

Analysis and design of water and wastewater treatment facilities.

654. **Industrial Waste Treatment.** (3) W
Prerequisite: CivE. 650.

Treatment and disposal of industrial wastes; studies of basic industries and their waste problems.

691R. **Civil Engineering Seminar.** (.5) F, W

694R. **Selected Problems in Civil Engineering.** (1-3) F, W, Sp, Su

698R. **Master's Project.** (1-6) F, W, Sp, Su
Prerequisite: consent of instructor and/or master's graduate committee.

699R. **Master's Thesis.** (1-9) F, W, Sp, Su

794R. **Selected Topics in Civil Engineering.** (1-3) F, W, Sp, Su

797R. **Research for Doctoral Students.** (1-9) F, W, Sp, Su

799R. **Doctoral Dissertation.** (1-9) F, W, Sp, Su

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Chairman: Douglas M. Chabries, 459 CB, 378-4012
Graduate Coordinator: Richard Christiansen, 441 CB,
378-6587

Faculty/Specialties

Professors

- Berrett, Paul O. (1964) Ph.D., University of Utah, 1965.
Microwave and Antenna Theory, System Analysis, Applied Electromagnetics.
- Bowman, Lawrence S. (1967) Ph.D., University of Utah, 1964.
Computers, Microwave Semiconductors.
- Chabries, Douglas M. (1978) Ph.D., Brown University, 1970.
Digital Signal Processing, Adaptive Filtering, Image and Sonar Processing.
- Christiansen, Richard (1978) Ph.D., University of Utah, 1976.
Digital Signal Processing, Image Processing, Neural Networks, Communication and Information Theory, Pattern Recognition.
- Clegg, John C. (1961) Ph.D., University of Utah, 1957. Electronics, High Frequency, Electronic Circuits and Power Electronics.
- Corn, David John (1981) Ph.D., Washington State University, 1966. Robotic Vision Systems, Microprocessor Applications.
- Humpherys, Deverl S. (1964) Ph.D., University of Illinois, Urbana, 1963. Electronics and Circuit Theory.
- Miner, Gayle F. (1960) Ph.D., University of California, Berkeley, 1969. Electromagnetic Theory, Fiber Optics, Data Acquisition.
- Woodbury, Richard C. (1959) Ph.D., Stanford University, 1965. Semiconductor and Magnetic Devices.

Associate Professors

- Bearson, Leroy Wood (1972) Ph.D., Auburn University, 1970. Computer Communication, Error Correction, Networking.
- Stirling, Wynn (1984) Ph.D., Stanford University, 1983. Linear System Theory, Estimation and Detection Theory, Communications and Information Theory.
- Ware, Gene A. (1987) Ph.D., Utah State University, 1980. Communications, Digital Systems, Microprocessors.

Assistant Professors

- Archibald, James K. (1987) Ph.D., University of Washington, 1987. Computer Architecture, Parallel Processing.
- Frost, Richard L. (1987) Ph.D., University of Utah, 1979. Digital Signal Processing, Information Theory, Image Processing, Neural Networks.
- Nelson, Brent E. (1984) Ph.D., University of Utah, 1984. VLSI Design, Computer Systems Design.
- Selfridge, Richard H. (1987) Ph.D., University of California, Davis, 1984. Fiber and Integrated Optics, Electromagnetics, Lasers.

Graduate Programs and Degrees

Electrical Engineering (M.S.)
Engineering Management (MEM)
Engineering (Ph.D.)

Areas of Specialization

Digital signal processing, image processing, VLSI systems and design tool development, automatic pattern classification and analysis, fiber and integrated optics, robot vision systems, electromagnetics and antennas, communications, and computer architecture.

General University Requirements

See the General Information section of this catalogue for university requirements that apply to all departments. For additional information on department procedures, requirements, academic

standards and expectations, scholarships, and financial assistance, consult the department graduate secretary.

Integrated Master's Program

See the College of Engineering and Technology section of this catalogue for a description of the integrated master's program in engineering. Admission requirements for this program are basically the same as those for the M.S. degree in electrical and computer engineering, but applicants must have a cumulative and technical course work GPA of 3.0 or above at the time of application.

PROGRAM AND DEGREE REQUIREMENTS

Electrical Engineering (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: The GRE test is required of applicants with degrees from nonaccredited institutions.
- II. Entry times: International students will be admitted only for fall semester. The department will adhere to the application deadlines published in this catalogue. Admission decisions concerning international students will be made in April. All other students may be admitted for any semester or term.
- III. Prerequisites: B.S. degree in electrical and/or computer engineering from an ABET-accredited institution with minimum GPA of 3.0 for last 60 hours and for all technical course work (such as mathematics, physics, engineering), *or*, with department consent, a B.S. degree in an allied discipline from an accredited institution or a B.S. degree in electrical and/or computer engineering from a non-accredited institution with a minimum GPA of 3.2 for last 60 hours and for all technical course work. Applicants with a baccalaureate degree in an allied discipline will be required to have completed a minimum of 36 credit hours in mathematics, physics, computer science, and engineering before being considered for admission.
- IV. Provisional admission: Applicants may be admitted provisionally but will generally be required to complete remedial work. Students admitted provisionally who fail to meet all the provisions of acceptance by the end of their first semester or term are automatically placed on departmental probation and will have one semester to clear the probational status or their graduate degree program will be terminated.

Requirements for Degree

- I. Credit hours: Minimum 34 course work hours.
- II. Required courses: (Note: Although the following courses are listed as required, students must receive the approval of the graduate advisory committee and the graduate coordinator before any of the courses can apply toward their graduate degree.)
 - A. ECEn. 513, 691R (a minimum of two semesters).
 - B. Mathematics/statistics courses: 6 hours from Math. 323, 332, 350, 355, 371, 372, 411, 415, 480, 512, 513R, 521, 530, 541, 542, 543, 585, Phscs. 517, 518, Stat. 521, 545.
 - C. Electrical engineering courses: 15 hours from any 500 and 600-level ECEn. courses except seminars and thesis/dissertation courses.

D. Thesis option: 6–9 hours of ECEn. 699R.

- III. Electives: Selected from above list or from following (or others) as approved by advisory committee and graduate coordinator: ECEn. 420, 432, 444, 460; CS 431, 444, 451, 455, 510, 521, 531, 551, 555, 560, 561, 581; ChEn. 582, 583; Phscs. 481, 551, 561, 562, 565, 566, 581; MeEn. 534, 575, 631.
- IV. Study list: The graduate study list must be submitted by the end of the fourth week of the entry semester. Failure to submit the study list on time will cause the student's registration to be placed on hold for the succeeding semester or term.
- V. Residence: See preceding college section.
- VI. Examinations: All graduate students are required to pass a written examination that examines eight areas of undergraduate electrical engineering preparation. Students admitted on regular status must take this examination during the first semester it is offered after their admission; those admitted on provisional status must take the examination the first semester it is offered after any provisions for undergraduate prerequisite course work have been satisfied. The examination is given each fall and winter semester, usually on a Saturday, at least ten weeks after the semester starts. The time and place will be posted October 1 and February 1 each year.
- VII. Thesis (for thesis option candidates).
- VIII. Examination: Oral defense of thesis. A one-hour public presentation scheduled in accordance with university procedures and deadlines.
- IX. Grades: No class on an approved study list may be repeated to raise the grade. The first grade received in the class will be used in computing the graduate GPA. Once a course listed on an approved study list has been taken, the course may not be removed from the study list.

Engineering Management (MEM)

See the College of Engineering and Technology section of this catalogue for a description of the interdisciplinary program in engineering management. Requirements specific to electrical engineering follow.

Admission and Entry

- I. Application requirements:
 - A. Same as for M.S. degree.
 - B. Indicate in statement of intent a desire to be considered for the MEM program.
- II. Entry times: International students will be admitted only for fall semester. The department will adhere to the application deadlines published in this catalogue. Admission decisions concerning international students will be made in April. All other students may be admitted for any semester or term.
- III. Prerequisite: Same as for M.S. applicants.
- IV. Provisional admission: Same as for M.S. applicants.

Requirements for Degree

- I. Credit hours (40): Minimum 40 course work hours.
- II. Basic curriculum requirements in conjunction with those specified in the preceding college section: 15 hours of technical courses which must include ECEn. 513 and 6 hours of mathematics and/or statistics.
- III. Examination: Same as for the M.S. degree.
- IV. Residence: See preceding college section.

- V. Consult department for additional requirements.
- VI. Grades: Same as for the M.S. degree.

Engineering (Ph.D.)

Admission and Entry

- I. Deadlines: University deadlines apply.
- II. Prerequisite: Before admission to candidacy students must take and pass a comprehensive Ph.D. qualifying examination as described below.
- III. Prerequisites: B.S. degree in electrical and/or computer engineering from an ABET-accredited institution with minimum GPA of 3.0 for last 60 hours and for all technical course work (such as mathematics, physics, engineering), *or*, with department consent, a B.S. degree in an allied discipline from an accredited institution or a B.S. degree in electrical and/or computer engineering from a non-accredited institution with a minimum GPA of 3.2 for last 60 hours and for all technical course work. Applicants with a baccalaureate degree in an allied discipline will be required to have completed a minimum of 36 credit hours in mathematics, physics, computer science, and engineering before being considered for admission.

Requirements for Degree

- I. Credit hours (68): Minimum 68 course work hours beyond the baccalaureate degree, including 18 dissertation hours (ECEn. 799R).
- II. Required courses: ECEn. 791R each semester of residence; 12 hours of mathematics/statistics.
- III. Electives: Determined in consultation with advisory committee.
- IV. Study list: Submitted at end of sixth week of admission.
- V. Maximum completion time: All course work for the Ph.D. degree beyond that used for the M.S. degree must be completed within seven years.
- VI. Skill requirement: 18–21 hours of integrated study in mathematics beyond college trigonometry (Math. 111 at BYU), statistics, or computer science. The advanced mathematics required above is in addition to this skill requirement.
- VII. Residence: See preceding college section.
- VIII. Dissertation.
- IX. Examinations:
 - A. Ph.D. Qualifying Examination.

The examination consists of eight sections:

 1. Linear Circuit and System Analysis (A)
 2. Linear Circuit and System Analysis (B)
 3. Electronic Circuits
 4. Digital Logic Circuits
 5. Computers
 6. Control Systems
 7. Electromagnetics
 8. Mathematics and Statistics

Each section is worth 100 points and opens with a fundamental problem and proceeds to more challenging questions. Students must complete at least six of the eight sections. Both the final answer and the solution methodology affect the grading.

- B. Final comprehensive examination: A 3-hour oral comprehensive examination on all graduate course work on the Ph.D. study list must be taken after the student has completed all required Ph.D. course work and after the student has passed the Ph.D. qualifying examination.
- C. Oral defense of dissertation. A one to two-hour public presentation and defense of the dissertation. This will be scheduled by the graduate coordinator in accordance with department and university procedures and deadlines.
- X. Grades: No class on an approved study list may be repeated to raise the grade. The first grade received in the class will be used in computing the graduate GPA.

ELECTRICAL AND COMPUTER ENGINEERING GRADUATE COURSES

511. Introduction to Linear System Theory. (3) F

Prerequisite: ECEn. 314, Math. 343 or 215.

Finite-dimensional linear systems. State variable realizations, canonical forms, controllability, observability, minimality. Time and frequency domain design of controllers and observers.

512. Active and Passive Filter Design. (3)

Prerequisite: ECEn. 314.

Design and frequency response characteristics of active and passive filters with emphasis on applications to signal processing.

513. Signal Analysis in Linear Systems. (3) F

Prerequisite: ECEn. 314 or graduate standing. Required of all graduate students.

Continuous and discrete signals in linear systems, using Laplace, Fourier, and Z-transforms. Sampling, simulation, analog and discrete filters, FFT, windowing, and signal reconstruction.

514. Digital Signal Processing Laboratory 1. (1) F

Prerequisite: ECEn. 513 or concurrent registration.

Testing signal processing algorithms and concepts using digital computer. Including discrete convolution, DFT, and digital filters.

515. Data Acquisition Systems. (3)

Prerequisite: ECEn. 313; 314 or concurrent registration.

Components and their characteristics required to convert physical variables to digital data. Relationship between digital data word bit size and component characteristics.

516. Adaptive Processing. (2) Sp

Prerequisite: ECEn. 513.

Adaptive digital filter theory, LMS adaptive algorithms, applications to learning filters, noise cancellation, and adaptive antenna arrays.

517. Digital Filters Signal Processing. (3) W

Prerequisite: Math. 322, ECEn. 513.

Digital filters and their application to signal processing.

518. Digital Signal Processing Laboratory 2. (1) W

Prerequisite: ECEn. 517 or concurrent registration.

Advanced laboratory experience in computer processing of digital signals and signals in discrete format.

519. Digital Image Processing. (3) Sp

Prerequisite: ECEn. 513.

Digital processing techniques for two-dimensional scene analysis, classification feature enhancement, contrast enhancement deblurring, data compression, etc.

520. Error-correcting Codes. (3) F

Prerequisite: ECEn. 324.

Methods, costs, and payoffs of various codes for correcting errors in digital systems.

521. Microprocessors. (3)

Prerequisite: ECEn. 420.

Architectures, languages, characteristics, and applications.

522R. Special Topics in Computer Systems. (1–3)

Prerequisite: consent of instructor.

523. Computer Network Queuing. (3) W

Prerequisite: ECEn. 513 concurrently and Stat. 332 or 421.

Queuing concepts related to computer systems and networks, resource allocation, speed, service time. Applications of random variables and probability theory.

525. Design Automation. (3)

Prerequisite: ECEn. 324.

Algorithms for cost effective payoffs, simulation and fault testing of digital electronics.

526. Local Computer Networks. (3) F

Prerequisite: ECEn. 327, 351.

Local computer network coupling fundamentals.

528. Computer Systems Architecture. (3)

Prerequisite: ECEn. 420.

Comparison of common and unique computer system architectures, generally large machines.

529. Computer Graphics and Real-Time Programming. (3)

Prerequisite: ECEn. 420.

Graphic input/output systems for digital computers; on-line and real-time hybrid systems taught on demand.

531. Power Systems Analysis. (3) W alt. yr.

Prerequisite: ECEn. 432.

Polyphase circuits, transmission line constants, power system representation, generalized circuit constants, symmetrical components, and fault studies.

532R. Special Topics in Power Systems. (3)

533. Power Machinery and Equipment. (3) W

Prerequisite: ECEn. 306 or 331.

Transformers, synchronous and induction AC machines, DC machines, fractional horsepower and control motors, polyphase rectifiers, introduction to machine dynamics.

535. Protective Relaying. (3) W alt. yr.

Prerequisite: ECEn. 432.

Methods and equipment used for electric utility and industrial power system protection.

536. Commercial and Industrial Power Systems. (3)

W alt. yr.

Prerequisite: ECEn. 306 or 331.

Design of commercial and industrial power systems and equipment; design of illuminating systems; preparation of specifications that conform to the National Electrical Code.

537R. Advanced Control Machinery Laboratory. (1)

Prerequisite: completion or concurrent registration in ECEn.

533.

Experiments with electrical machinery, control systems, and power distribution systems.

542R. Special Topics in Electronics. (1–3)

Prerequisite: consent of instructor.

544. Digital Communication Theory. (3) F

Prerequisite: ECEn. 444.

Theory and design of optimal digital communication systems with noise, matched filters, correlation detectors, convolution codes, sequential coding/decoding schemes, block coding, and spread spectrum.

545. Information and Coding Theory. (3) W

Prerequisite: ECEn. 314, Stat. 421.

Mathematical development of information and coding theory applied to communication and other stochastic processes.

546. Fiber Optic Communications. (3)

Prerequisite: ECEn. 314, 360.

Fiber optic communications system components and their operating characteristics. Performance of light communications systems.

550. Device Electronics for Integrated Circuits. (4) F

Prerequisite: ECEn. 350.

Semiconductor device analysis and simulation. Analog integrated circuit design.

551. VLSI Systems Design. (3) W

Prerequisite: ECEn. 351.

Design of structured circuit systems for very large-scale integrated semiconductor chips. Architecture of digital VLSI systems.

553. VLSI Process Technology. (3) F

Prerequisite: senior or graduate standing in engineering or physical sciences.

Physical and chemical process steps used in fabricating very large-scale integrated circuits on monolithic silicon crystal.

555. VLSI Testing. (1) F, W

Prerequisite: ECEn. 351.

Testing of ICs designed previous semester in ECEn. 351. Topics in VLSI testable circuit designs.

560. Microwave Engineering. (4) W

Prerequisite: ECEn. 361, 460.

Application of electromagnetic field theory to microwave components and systems.

561. Communication Circuits. (4) W

Prerequisite: ECEn. 360, 442.

Circuits and RF techniques used in communication systems.

563. Antenna Theory. (3) F alt. even yr.

Prerequisite: ECEn. 560.

Radiation, terminal, and distributed properties of antenna structures.

593R. Special Topics in Electrical Engineering. (3)

Prerequisite: consent of instructor.

Topics vary. Recent developments in electrical engineering.

598R. Special Problems. (3) F, W, Sp

Prerequisite: consent of instructor.

644. Pattern Recognition. (3) alt. yr.

Prerequisite: ECEn. 513, Stat. 321 or 421.

Decision surfaces and Bayesian theory applied to multidimensional pattern analysis and recognition with and without training data.

646. Optimal Estimation Theory. (3)

Prerequisite: ECEn. 564.

Optimal filtering techniques, including Wiener and Kalman filtering. Estimating signal parameters in noise.

661. Advanced Electromagnetic Fields. (3) F alt. odd yr.

Prerequisite: ECEn. 560.

Physical interpretation of electromagnetic fields. Mathematical methods of solving boundary value and other field problems.

691R. Graduate Seminar. (0.5) F, W

Technical presentations by graduate students, faculty members, and invited guests.

699R. Master's Thesis. (1-9)

Prerequisite: graduate standing and consent of major professor.

791R. Seminar for Doctoral Students. (1)

794R. Selected Topics in Electrical and Computer Engineering. (1-3)

797R. Research for Doctoral Students. (1-9)

799R. Doctoral Dissertation. (1-9)

DEPARTMENT OF INDUSTRIAL EDUCATION

Chairman: Garth A. Hill, 230 SNLB, 378-6494

Graduate Coordinator: Jerry D. Grover, 230 SNLB, 378-2023

Faculty/Specialties

Professors

Grover, Jerry D. (1968) Ed.D., Brigham Young University, 1968. Automotive Technology, Student Teaching.

Hinckley, Edwin C. (1963) Ed.D., Colorado State College, 1963. Woods.

McArthur, Ross J. (1956) Ed.D., University of Missouri, Columbia, 1955. Construction, Woods.

Nish, Dale L. (1967) Ed.D., Washington State University, 1967. Woods.

Associate Professors

Gheen, W. Lloyd (1978) Ed.D., Texas A&M University, 1970. Plastics, Teacher Education.

Gonzales, Ronald F. (1977) Ph.D., Purdue University, 1982. Automotive Technology, Electronics.

Hill, Garth A. (1972) Ph.D., Colorado State University, 1979. Metals, Teacher Education.

Martin, Loren (1982) Ed.D., Utah State University, 1973. Construction, Teacher Education.

Newitt, Jay S. (1976) Ph.D., Colorado State University, 1980. Construction.

Assistant Professors

Marchant, Marlow J. (1981) Ph.D., Texas A&M University, 1986. Printing, Computers.

Rogers, Leon R. (1981) M.S., Colorado State University, 1982. Construction.

Graduate Program and Degree

Industrial Education (M.S.)

These programs are designed to meet the needs of industry and education. They provide specialization for management, supervision, and training in industry. They also provide preparation for master teachers, supervisors, and coordinators of industrial education.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Industrial Education (M.S., Nonthesis)

Admission and Entry

- I. Deadlines: University deadlines apply.
- II. Prerequisite: A valid teaching certificate or a minimum of 30 semester hours in acceptable industrial or vocational education courses.

Requirements for Degree

- I. Credit hours (34): Minimum 34 hours, including a field study (IndE. 698R).
- II. Required courses: IndE. 615, 625, 645, 690R, 694R, 698; EPsy. 501, 560, or 564; EPsy. 672, plus a minimum of 8 hours selected from graduate industrial education courses.
- III. Electives or minor: As approved by the department.
- IV. Examination: Oral defense of course work.

Industrial Education (M.S., Thesis)

Admission and Entry

- I. Deadlines: University deadlines apply.
- II. Prerequisite: 30 hours of acceptable undergraduate industrial or vocational education courses, or a minimum of six years of vocational experience.

Requirements for Degree

- I. Credit hours (34): Minimum 28 course work hours plus 6 thesis hours (IndE. 699R).
- II. Required courses: IndE. 535, 615, 690R, 694R, 699R; EPsy. 672; Stat. 552 or 501; plus a minimum of 6 hours selected from graduate industrial education courses.
- III. Minor or electives: Approved by the department.
- IV. Examination: Oral defense of course work and thesis.

INDUSTRIAL EDUCATION GRADUATE COURSES

505. Industrial Arts for Elementary Teachers. (2) Sp, Su alt. yr.

Nature and needs of industrial arts teachers in the elementary schools, emphasizing content and procedures.

535. Industrial/Vocational Safety and Liability. (2) Sp, Su alt. yr.

Accident causes and prevention in industrial and vocational education laboratories; teacher and student liability; present laws affecting school safety.

Mechanical Engineering

593R. Workshop in Industrial Education. (1-3) F, W, Sp, Su

Current industrial and technological advances.

610. History and Trends in Vocational and Technical Education. (2) Sp, Su alt. yr.

Historical developments from early beginnings to the present.

615. Principles and Objectives of Vocational and Technical Education. (2) Sp, Su alt. yr.

Philosophical background for industrial technology and vocational education.

625. Course Construction in Vocational and Technical Education. (2) Sp, Su alt. yr.

Analyzing an occupation, developing objectives, and individualizing a course unit.

630. Problems of Adult Vocational Education. (2) Sp, Su alt. yr.

Development of the adult vocational education movement; its problems, emphasizing continuing education.

635. Planning and Equipping Vocational and Technical Programs. (2) Sp, Su alt. yr.

Facilitating supervised instruction in industrial arts, vocational education, and technical education laboratories.

640. Coordination and Supervision of Vocational and Technical Education. (2) Sp, Su alt. yr.

Methods, as well as laws, regulations, and policies.

645. Visual and Graphic Materials in Vocational Education. (2) Sp, Su alt. yr.

Prerequisite: IndE. 625.

Selection, development, and use of visual and graphic materials and their contribution to vocational and technical education.

690R. Seminar. (1) Sp, Su

Review of latest developments and research findings in the field of vocational and technical education.

694R. Readings and Conference. (1-3) F, W, Sp, Su

Limited to a maximum of 3 credit hours.

695R. Advanced Topics in Vocational and Technical Education. (1-3) F, W, Sp, Su

Limited to a maximum of 4 credit hours.

698R. Master's Project. (2-3) F, W, Sp, Su

699R. Master's Thesis. (1-6) F, W, Sp, Su

DEPARTMENT OF MECHANICAL ENGINEERING

Chairman: Joseph C. Free, 242-C CB, 378-2625

Graduate Coordinator: John N. Cannon, 242-E CB, 378-6539

Faculty/Specialties

Professors

Cannon, John N. (1957) Ph.D., Stanford University, 1965.

Fluids, Combustion, Thermodynamics.

Free, Joseph C. (1961) Ph.D., Massachusetts Institute of Technology, 1967. Dynamic Systems, Modeling, Automatic Controls, Design Methods for Complex Systems.

Heaton, Howard S. (1963) Ph.D., Stanford University, 1963. Heat Transfer and Fluid Mechanics.

Ulrich, Richard D. (1968) Ph.D., Purdue University, 1959. Fluids, Thermodynamics.

Wille, Milton G. (1958) Ph.D., University of Michigan, Ann Arbor, 1964. Design, Corrosion, Collision Safety, Biomechanics.

Associate Professors

Adams, Brent L. (1984) Ph.D., Ohio State University, 1979. Materials, Crystallographic Texture.

Chase, Kenneth W. (1968) Ph.D., University of California, Berkeley, 1972. Computer-aided Design for Manufacturing.

Eastman, Paul F. (1985) Ph.D., University of Utah, 1965. Ceramics, Polymer and Composite Materials, Aerodynamics.

Germene, Geoffrey J. (1979) Ph.D., Brigham Young University, 1978. Combustion System Design, Internal Combustion Engines, Automotive Engineering, Thermodynamics.

Red, W. Edward (1983) Ph.D., Arizona State University, 1972. Robotics, Automation, Applied Mechanics.

Rotz, Christopher A. (1985) Ph.D., Massachusetts Institute of Technology, 1978. System Dynamics and Modeling, Polymer Engineering, Design and Manufacturing.

Smith, Craig C. (1980) Ph.D., Massachusetts Institute of Technology, 1978. Dynamic Systems and Controls, Automation, Auto Safety.

Assistant Professors

Parkinson, Alan R. (1982) Ph.D., University of Illinois, 1982. Optimization.

Queiroz, Mardson (1987) Ph.D., Carnegie-Mellon University, 1987. Combustion.

Sorensen, Carl (1987) Ph.D., Massachusetts Institute of Technology, 1985. Design for Manufacture, Manufacturing Processes.

Webb, Brent (1986) Ph.D., Purdue University, 1986. Heat Transfer.

Graduate Programs and Degrees

Mechanical Engineering (M.S.)

Engineering Management (MEM)

Engineering (Ph.D.)

Areas of Specialization

Design, materials, systems and manufacturing, thermal sciences.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

Integrated Master's Program

See the College of Engineering and Technology section of this catalogue for a description of the integrated master's program in engineering. Special requirements for this program are basically the same as those for the M.S. degree in mechanical engineering but include the following:

I. Application requirements:

- A. Formal application for admission submitted to the Office of Graduate Studies at beginning of junior year (before taking final 30 hours of course work).
- B. Cumulative GPA of 3.0 for previous 60 hours of course work.

II. Degree requirements:

- A. Cumulative GPA of 3.0 or above in all courses to be counted toward the master's degree.

- B. Study list for both B.S. and M.S. programs to be filed at the beginning of the junior year.

PROGRAM AND DEGREE REQUIREMENTS

Mechanical Engineering (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examinations:
 - 1. International applicants must submit general GRE and engineering subject test as well as TOEFL scores.
 - 2. U.S. applicants must prove to the department that they have passed the state fundamentals of engineering (FE, formerly EIT) examination, which the state of Utah offers each April and October.
- II. Prerequisites:
 - A. B.S. degree in mechanical engineering or an allied discipline with approval.
 - B. GPA of 3.0 or above in last 60 hours for regular admission.

Requirements for Degree

- I. Credit hours (34–40):
 - A. Thesis option (34): Minimum 34 hours including 9 thesis hours (MeEn. 699R), MeEn. 591R, and 6 hours of advanced mathematics or equivalent.
 - B. Nonthesis option (40): Minimum 40 course work hours including MeEn. 591R and 6 hours of advanced mathematics or equivalent. A maximum of 3 hours of prerequisite work, such as 695R, may be included in the 40-hour total.
- II. Submit study list of approved courses during the first semester.
- III. Prospectus: Each student on the thesis option must submit a prospectus before beginning significant work on the thesis.
- IV. Residence: See preceding college section.
- V. Examinations:
 - A. FE examination or GRE (if not taken at the time of admission).
 - B. Oral defense of thesis for thesis option candidates.
- VI. Usual time requirement: One calendar year.

Engineering Management (MEM)

See the College of Engineering and Technology section of this catalogue for a description of the interdisciplinary program in engineering management. The following section lists requirements specific to mechanical engineering.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE and engineering subject test for applicants from non-ABET (Accreditation Board for Engineering and Technology, Inc.) accredited institutions.
 - C. Indicate in statement of intent a desire to be considered for program.
- III. Prerequisite: B.S. degree in engineering.

Requirements for Degree

- I. Credit hours (40): Minimum 40 course work hours.
- II. Basic curriculum requirements: See preceding college section.
- III. Examination: Successful completion of the fundamentals examination (FE), formerly the engineering-in-training (EIT) examination, or the basic GRE plus engineering subject test.

Engineering (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: FE (score of 70 percent) or general GRE (score of 1650) and advanced engineering subject test (score of 550).
- II. Prerequisites:
 - A. B.S. degree in mechanical engineering or allied discipline with approval.
 - B. GPA of 3.0 or above for last 60 hours (for regular admission).

Requirements for Degree

- I. Credit hours (68): Minimum 68 hours of approved technical classes beyond the B.S. degree, including 12 hours of mathematics courses and 18 hours of dissertation (MeEn. 799R).
- II. Skill requirement: 18–21 hours of integrated study in mathematics beyond college trigonometry (Math. 111 at BYU), statistics, or computer science. Normally applicants have completed this requirement as undergraduates. The advanced mathematics and science requirement referred to above is in addition to this skill requirement.
- III. Prospectus: Must be submitted and approved before the student can begin significant work on dissertation.
- IV. Residence: See preceding college section.
- V. Dissertation.
- VI. Examinations:
 - A. Ph.D. comprehensive written and oral examination given in January and June each year is required for acceptance to candidacy. The examination must be taken in the first year of the Ph.D. program (usually after an M.S. degree) and can be retaken only once at the next offering. Students must apply in writing, one month in advance, to take the examination.
 - B. Oral defense of dissertation.

MECHANICAL ENGINEERING GRADUATE COURSES

510. Compressible Fluid Flow. (3)

Prerequisite: MeEn. 312.

One-dimensional analysis of compressible flow with area change, friction, heat transfer, shock waves, and combined effects. Experimental methods.

511. Intermediate Compressible Flow. (3) On dem.

Prerequisite: MeEn. 510.

Potential theory and Euler's equations. Supersonic and subsonic multidimensional flow. Method of characteristics; small perturbation theory; Hodograph theory. Theoretical airfoil coefficients, etc.

512. Boundary Layer Theory. (3)

Prerequisite: MeEn. 312 or consent of instructor.

The stress tensor; Navier-Stokes equations; exact solutions for classical flows; Prandtl's boundary layer equations; separation; Karman-Pohlhausen integral methods; approximate solutions, numerical solutions, and applications.

515. Applied Aerodynamics and Flight Mechanics. (3)

Prerequisite: MeEn. 322.

Modern applied aerodynamics: performance, stability, and control of aerospace vehicles.

521. Energy Resources and Conversion. (3)

Prerequisite: MeEn. 322 or consent of instructor.

New and conventional energy resources and energy conversion systems using the principles of thermodynamics.

531. Design of Control Systems. (3)

Prerequisite: MeEn. 435.

Classical frequency response and time domain design of control systems. State variable control, computer simulation of control systems.

533. Stress Analysis and Design of Mechanical Structures. (3) On dem.

Prerequisite: CiviE. 203.

Predicting stress and deflection; optimization of components; applications to vehicle and aerospace structure design. Introduction to finite element computer analysis.

534. Dynamic System Analysis and Design. (3)

Prerequisite: MeEn. 435.

Lumped models of mechanical, electrical-mechanical, fluid, and thermal systems; graphic models; physical system response; computer simulation; design of dynamic systems.

535. Advanced Vibration Analysis. (3)

Prerequisite: MeEn. 435.

Vibrations of systems with multiple degrees of freedom; vibrations of elastic bodies; random vibration. Computer-aided vibration testing and analysis.

537. Advanced Mechanisms. (3)

Prerequisite: MeEn. 337.

Kinematics and dynamics of advanced mechanisms such as robots; computer simulation of mechanism motion.

541. Numerical Heat Transfer. (3)

Prerequisite: MeEn. 440, Math. 311 or consent of instructor.

Heat transfer analysis by numerical methods. Finite difference and finite element methods, stability and error analysis. Use of digital computers in heat transfer.

542. Design of Heat Transfer Systems. (3) On dem.

Prerequisite: MeEn. 440.

Design of devices where heat transfer is a predominate effect; practical problems from industry; energy conservation economics.

552. Design and Materials Applications. (3)

Prerequisite: MeEn. 252, 372.

Applied and residual stresses; materials selection; static, impact, and fatigue strength; fatigue damage; surface treatments; elastic deflection and stability—all as applied to mechanical design.

554. Advanced Manufacturing Processes. (3)

Prerequisite: MeEn. 252 or consent of instructor.

Basic analysis of forming, machining, welding, and casting processes, emphasizing microstructures. Selection of process parameters, considering economics and material properties.

555. Flow and Fracture of Materials. (3)

Prerequisite: CiviE. 503.

Continuum theory of plasticity; linear elastic fracture mechanics; introduction to structured continuum theories for polycrystalline media.

557. Corrosion. (3)

Prerequisite: Chem. 105.

Basic principles, eight common forms of corrosion, testing, materials, applications, modern theory, and high temperature metal-gas reactions.

575. Optimization Techniques in Engineering. (3)

Prerequisite: FORTRAN or similar computer language background, Math. 321.

Application of nonlinear computer optimization techniques to constrained engineering design. Theory and use of state-of-the-art computer routines.

577. Computer-aided Engineering Software Design. (3)

Prerequisite: knowledge of FORTRAN or similar computer language.

Adaptation of interactive computing to engineering design; use of engineering library utility routines for computer graphics, data access, user interface, etc. Appropriate programming techniques and structure for engineering applications. Term project.

581. Internal Combustion Engines. (3)

Prerequisite: MeEn. 322.

Computer modeling of performance, fuel economy, exhaust emissions of spark-ignition and compression-ignition engines. Theoretical and actual cycles. CFR and production engine dynamometer tests.

584. Rocket, Jet Engines, and Fluid Machinery Design. (3)

Prerequisite: MeEn. 312, 322.

Design and synthesis of radial and axial-flow machines, pumps, and rocket, ramjet, and turbojet engines; application of fluid flow and thermodynamic fundamentals.

591R. Seminar. (0.5)

Student and faculty presentations of current topics.

595R. Special Topics in Mechanical Engineering. (Arr.)

Prerequisite: consent of department chairman.

611. Theories of Fluid Turbulence. (3) On dem.

Prerequisite: MeEn. 312, Math. 321.

Theoretical and experimental study, including statistical and phenomenological models. Analyzing classical flow equations using Reynolds convention.

612. Principles of Ideal-Fluid Dynamics. (3) On dem.

Prerequisite: MeEn. 312, Math. 321.

Ideal-fluid hydrodynamics and aerodynamics, including ideal-fluid assumptions, rotational and irrotational flow, acyclic and cyclic motion, circulation, and lift.

631. Advanced Automatic Control Applications. (3)

Prerequisite: MeEn. 531.

Mechanical control system analysis by computer methods; nonlinear methods; applications of modern control theory and computer controllers.

637. **Dynamics in Mechanical System Design.** (3) On dem.
Prerequisite: MeEn. 531 or 534.

Applied design analysis of complex systems needing evaluation of vibrations, transient response, and/or feedback control. Classical, modern, and computer techniques.

641R. **Special Topics in Heat-Transfer Theory.** (3)
On dem.

Prerequisite: MeEn. 440.

Analysis of heat transfer in conduction, convection, or radiation.

642. **Radiative Heat Transfer.** (3)

Prerequisite: MeEn. 440 or equivalent.

Engineering analysis of radiant heat exchange between surfaces, in enclosures, and in absorbing, emitting, and scattering media.

643. **Convective Heat Transfer.** (3)

Prerequisite: MeEn. 440 or equivalent.

Engineering analysis of convective heat transfer in internal and external laminar and turbulent flows.

651. **Advanced Topics in Manufacturing.** (3) On dem.

Prerequisite: MeEn. 554 or consent of instructor.

Presentation and evaluation of advanced aspects of material behavior, forming, welding, casting, and machining.

661. **Selected Topics in Solid Mechanics.** (3) On dem.

Prerequisite: CivE. 203, Math. 321.

Three-dimensional equations of elasticity applied to engineering problems including tensor notation, wave propagation, computer solutions, and rate-dependent and inelastic materials.

695R. **Special Problems for Master's Students.** (1-3)

Prerequisite: consent of department chairman.

697R. **Research.** (6-9) On dem.

699R. **Master's Thesis.** (1-9)

791R. **Seminar for Doctoral Students.** (1)

795R. **Selected Topics in Mechanical Engineering.** (1-3)

799R. **Doctoral Dissertation.** (1-18)

DEPARTMENT OF TECHNOLOGY

Chairman: J. L. Carroll, 435 CTB, 378-3892

Graduate Coordinator: Kay S. Mortensen, 435-E CTB, 378-6303

Faculty/Specialties

Professors

Allen, Dell K. (1960) Ed.D., Utah State University, 1973.

Computer-integrated Manufacturing, Group Technology.

Mortensen, Kay S. (1968) Ph.D., University of Utah, 1967.

Materials, Expert Systems, Design Methods.

Raisor, E. Max (1968) M.S., Brigham Young University, 1975.

Interactive Computer Graphics.

Wilkes, Doran F. (1958) Ed.D., University of Missouri, Columbia, 1966. Basic Engineering Graphics, Descriptive Geometry, Computer-aided Design.

Associate Professors

Carroll, Jim L. (1986) B.S., Brigham Young University, 1951.
Manufacturing Systems Analysis.

Holt, Ivin L. (1963) Ed.D., Arizona State University, 1972.

Prototype Fabrication, Industrial Electronics.

Kunzler, John J., Jr. (1971) M.S., Brigham Young University,

1980. Computer-integrated Manufacturing, Manufacturing Systems.

Simmons, Val E. (1969) Ph.D., Utah State University, 1970.

Mechanism and Machine Design.

Smart, Merrill J. (1967) M.S., University of Utah, 1962. Real-Time Computer Systems.

Strong, A. Brent (1986) Ph.D., University of Utah, 1971.

Composites, Plasma Surface Treatments, Plastics.

Tolman, Wilford J. (1960) M.S., Brigham Young University,

1964. Computer-assisted Part Programming, Computer Graphics.

Assistant Professors

Carter, Perry W., II (1980) M.S., Brigham Young University, 1974. Automatic Assembly.

Dillenbeck, Vern R. (1982) M.S., Florida University of Technology, 1982. Machining Operations.

Harrell, Charles R. (1982) M.S., University of Utah, 1982. Simulation.

Hawks, Val D. (1985) MIE, Lehigh University, 1986. CIM Data Base Management Systems.

Helps, C. Richard G. (1986) MSEE, Witwatersrand University, Johannesburg, South Africa, 1986. Real-Time, Process Control, Automation Systems.

Jensen, C. Gregory (1983) M.S., Brigham Young University, 1982. Computer Graphics Software, Data Base Development.

Kohkonen, Kent E. (1970) M.S., Brigham Young University, 1976. CNC Software Development, Processing Languages, Parametric Programming, Tool Data Base Development, Plastic.

Mather, C. Glayd (1974) M.S., Utah State University, 1965. Information Transmission, Light Frequency Systems.

Owen, Earl F. (1982) M.S., University of Utah, 1972. RF Microwave Circuits.

Phillips, David P. (1985) M.S., University of Los Alamos, New Mexico, 1979. Microcomputer Hardware and Software.

Whited, Charles R. (1969) M.S., University of Utah, 1957. Real-Time Software, Process Control.

Graduate Programs and Degrees

Computer-integrated Manufacturing (CIM) (M.S.)

Master of Technology Management (MTM)

Areas of Specialization

See faculty specialties.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Computer-integrated Manufacturing (M.S.)

Admission and Entry

I. Application requirements:

A. Deadlines: University deadlines apply.

B. Entrance examinations:

1. General GRE with score of 1650 (combined Q, V, A score).

2. Diagnostic entrance examination to be taken the first week of admission.
 3. TOEFL score of 575 for all international applicants whose native language is not English.
 - C. GPA: Must be 3.0 or higher.
 - D. Consult graduate coordinator for additional information.
- II. Prerequisites:
- A. Baccalaureate degree in engineering, engineering technology, or a related field with department approval.
 - B. Basic sciences background needed, along with engineering, mathematics, modern manufacturing methods, and engineering economics.
 - C. All prerequisites must be completed before entrance into the program. Students must make up any deficiencies after consultation with a graduate faculty member and approval from the department.
- Requirements for Degree
- I. Credit hours (3-4): Minimum 25 course work hours plus 9 thesis hours (CIM 699R).
 - II. Required courses: CIM 533, 529, 534, 542, 591R each fall and winter semester after admission.
 - III. Mathematics: 6 credits of approved mathematics above Math. 113 and an approved statistics course
 - IV. Electives: Minimum 9 hours from CIM 530, 536, 537, 538, 541, and 546.
 - V. Thesis: Minimum 9 thesis hours.
 - VI. Examinations.
 - A. Student must pass a comprehensive examination on course work during the last semester.
 - B. Oral defense of thesis.

Master of Technology Management (MTM)

See the College of Engineering and Technology section of this catalogue for a description of the interdisciplinary program in engineering management. The following section lists requirements specific to the master of technology management program.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examinations:
 1. General GRE with a composite score of 1650 (combined Q, V, A score).
 2. Diagnostic entrance examination to be taken the first week of admission.
 3. TOEFL score of 575 for all international applicants whose native language is not English.
 - C. GPA: 3.0 minimum required.
- II. Prerequisite: Baccalaureate degree in engineering technology.
- III. Entry times: Spring or summer terms or fall semester.

Requirements for Degree

- I. Credit hours (40-5): Minimum 40.5 hours including 25 hours of management courses, 15 approved hours from the CIM program, and Tech. 591R.
- II. Direct inquiries about additional requirements to the graduate coordinator.

Industrial CIM Program

An accelerated program is available to certain industrial employees who are engineering graduates. The program allows candidates to earn a master's degree in five summer terms of five weeks each. This program requires a project (Tech. 698R, 3 credits) and can include Tech. 528, 540, and 547. Consult the graduate coordinator for more information.

TECHNOLOGY GRADUATE COURSES

Note: Most graduate-level courses in this department are offered once per year.

528. Electronic Fabrication and Assembly. (3) Sp

Prerequisite: EET 314 or equivalent and consent of instructor.

Theory and application of manufacturing processes required to produce electronic equipment. (Available only to students in the Industrial CIM Program.)

529. Manufacturing Information Processing and Networks. (3) W

Prerequisite: Phcs. 221, EET 443.

Function and system analysis and application for sensing, sending, and processing manufacturing information; metallic and lightwave technology networking, data, media, standards, topologies, protocols, instrumentation, and integration.

530. Manufacturing Simulation. (3) F

Prerequisite: MET 332, DET 306, and consent of instructor.

Theory and practical application of plant layout techniques, emphasizing materials-handling systems and computer-aided plant layout.

533. Computer-integrated Manufacturing. (3) W

Prerequisite: MET 430, 432.

Basic activities, elements, and principles of computer-aided manufacturing, including terminology, systems integration, architecture, data-base development, interfaces, and computer hardware and software requirements.

534. Automation. (3) F

Designed to give students an understanding of the various types of hardware used in manufacturing automation, including robots and automated manufacturing equipment.

536. Geometric Modeling Techniques. (3) W

Prerequisite: Math. 215, DET 437.

Advanced techniques in geometric modeling; decompositions of complex geometries into appropriate intermediate functions. Applications include meshing and tool path generation.

537. CIM Systems Management. (3) F

CIM systems philosophies including evaluation, productivity considerations, cost justification, procurement procedures, implementation, and management/operator training programs, emphasizing effective communication skills.

538. Finite Element Modeling. (3) F

Prerequisite: CivE. 203, Math. 321

Techniques in the generation of finite element models through the use of computer-aided-design tools; three-dimensional modeling.

540. Computer-aided Testing. (3) Sp

Prerequisite: consent of instructor.

An introduction to computer-aided testing for product quality assurance using microcomputers, IEEE Bus instrumentation, and host minicomputer systems. (Available only to students in the Industrial CIM Program.)

541. Metallurgy and Materials Science. (3) F

Prerequisite: MET 335, Math. 321, CivE. 203

Builds on the manufacturing and materials background of the student to investigate the interrelationship of the material and the process. Heat treatment of the metals, welding metallurgy, corrosion control, residual stresses, and fatigue are some of the topics.

542. Design for Manufacturing. (3) F

Prerequisite: DET 326.

Selection of assembly methods, manufacturing methods, and materials and their influence on the cost and function of the product.

546. Rule-based Design and Manufacture. (3) W

Prerequisite: programming language, DET 326 or equivalent, Math. 321.

Heuristics and algorithms of design and manufacture investigated and applied to a knowledge-based system.

547. Information Transmission. (3)

Prerequisite: EET 314 and consent of instructor.

Function and system analysis and applications for sensing, sending, and processing information.

591R. Graduate Seminar. (0.5) F, W

Prerequisite: graduate standing in technology.

595R. Special Topics. (Arr.) F, W, Sp, Su

Prerequisite: department approval.

698R. Master's Project in Computer-integrated Manufacturing. (1-3) Sp

Prerequisite: department approval.

699R. Master's Thesis in Computer-integrated Manufacturing. (3) F, W, Sp, Su

Prerequisite: departmental approval.



COLLEGE OF FAMILY, HOME, AND SOCIAL SCIENCES

Dean: Stan L. Albrecht, Professor, Sociology (990 SWKT)

Associate Dean, Graduate Studies: Richard H. Jackson, Professor, Geography (922 SWKT)

Associate Dean, Curriculum: Terrance D. Olson, Professor, Family Sciences

The College of Family, Home, and Social Sciences offers an extensive network of graduate programs which prepare students for academic, clinical, and field research and practice. The college is composed of the following departments, interdisciplinary programs, and research units:

DEPARTMENTS

Anthropology
Clothing and Textiles
Economics
Family Sciences
Geography
History
Home Economics
Political Science
Psychology
Social Work
Sociology

INTERDISCIPLINARY PROGRAMS

The College of Family, Home, and Social Sciences has several interdisciplinary programs. Those that offer academic programs are:

David M. Kennedy Center for International Studies
Center for Family and Community History
Family Studies

RESEARCH UNITS

Women's Research Institute

Director: Mary Stovall (940 SWKT)

The institute encourages and supports research on a wide variety of subjects related to women. Graduate scholarships in amounts up to \$500 are awarded annually for selected research projects.

Comprehensive Clinic

Director: Richard Bednar (244 TLRB)

The Comprehensive Clinic at Brigham Young University is a unique interdisciplinary training and research facility housing the finest video and computer facilities available and a staff of

skilled technicians and secretaries to support graduate student and faculty research. The clinic currently functions as a training facility for an APA-approved clinical psychology Ph.D. program, AAMFT-approved marriage and family therapy Ph.D. and M.S. training programs, a certified MSW training program, a public nursing program, and a communicative disorders M.S. training program. In addition, the clinic provides the university and the broader geographical community with mental health services and serves between 200 and 250 clients each week. The clinic contains eleven counseling rooms, four seminar rooms, and two large communicative disorders classrooms equipped with video cameras and portable playback units. Fourteen small session rooms are equipped for audio recording.

The participating departments in the clinic also provide curricula and experience in settings outside the clinic through internships and community education activities. Each department provides additional research and clinical facilities designed to reinforce and integrate student classroom learning in a practical environment. In the Psychology Department, for example, students can enhance their knowledge of research methodology and laboratory procedures by participating in class-related laboratory experiences or faculty sponsored research programs.

Gerontology Resource Center

Director: Phileon B. Robinson, Jr. (934 SWKT)

Established to benefit the older segment of the population, the center offers several programs and services, one of which is the encouragement of age-related research. The center provides teaching opportunities for interested graduate students.

Joseph Fielding Smith Institute for Church History

Director: Ronald K. Esplin (302 KMB)

The mission of this institute is to make a scholarly study of the Latter-day Saint past. Its personnel are historians whose primary work is writing and publishing for professional and general Church audiences. The institute also seeks to facilitate the research of other Church history scholars by providing limited support for research and publication.

Family and Demographic Research Institute

Director: Stephen J. Bahr (820 SWKT)

Organized to encourage and support basic and applied research on family life and demography, the institute is currently involved in studies on such subjects as teenage pregnancy, marriage preparation, fertility, religiosity, and marriage satisfaction. Activities of the institute include weekly symposia for

sharing and evaluating the findings of faculty and graduate student research, publication of a multidisciplinary journal of family life, and an annual research conference.

Museum of Peoples and Cultures

Director: Joel Janetski (105 ALLN)

Closely associated with the Anthropology Department, the Museum of Peoples and Cultures offers unique research opportunities for students and faculty, several of whom have research offices in the museum. Located south and west of campus in Allen Hall, the museum holds a number of important archaeological and ethnographic collections that have not been systematically analyzed and reported. These collections, which represent Utah Valley, the American Southwest, and Mesoamerica, as well as other parts of the world, provide material for thesis topics, professional publications, and academic credit. Research entities in the museum include the Office of Public Archaeology, one of the most active archaeological contracting organizations in the intermountain area, with a permanent staff of eight, and the Archaeological Technical Laboratory, which specializes in botanical and minerals analysis. The Office of Public Archaeology has recently made a major commitment to research on the Western Anasazi.

Charles Redd Center for Western Studies

Director: Thomas G. Alexander (4069 HBLL)

Established in 1972 under an endowment from Charles Redd, a prominent Utah stockman and philanthropist, the center is charged with promoting the study of all aspects of the American West. The center publishes a monograph series, assists faculty and student research through grants and fellowships, and sponsors lectureships each year.

Family History Services Center

Director: William G. Hartley (207 KMB)

The center is an applied research arm of the Center for Family and Community History (see below). It specializes in genealogical and family history research.

Center for Family and Community History

Director: G. Wesley Johnson (335 KMB)

The Center for Family and Community History is charged with the supervision of four major areas of history: genealogy and family, community, and public history. It also has responsibility for developing public service programs, organizing conferences and lecture series, sponsoring basic and applied research, and maintaining a publications program. Associated faculty members are linked to the center in matters of research on genealogical, family, and community history.

Jerusalem Center for Near Eastern Studies

Director: Robert C. Taylor (309 HCEB)

On Mount Scopus, overlooking the Holy City, BYU's newly completed Jerusalem Center for Near Eastern Studies provides extraordinary educational opportunities for students and scholars. A seven-tiered, 120,000-square-foot structure, the center

houses an extensive learning resource area, classrooms, dormitories, galleries, exhibits, a library, and auditoriums. Scholars and visitors from other universities, as well as students enrolled in its academic programs, are served here. The center's library, for example, offers a selected collection of contemporary Holy Land readings, rare books, special collections, and accessible computer data. For information concerning opportunities for graduate study in Jerusalem, call or write Kent Jackson, chairman of Near Eastern Studies (211 HRCB). Travel study information can be obtained from the director of the Jerusalem Center.

Libraries, Archives, and Other Facilities

1. **Wirthlin Public Opinion Archives.** The Political Science Department houses these archives, which contain a wealth of information on political science and public policy issues. Corollary activities in the department are a Voting Behavior Studies Workshop and a Policy Research Workshop.
2. **Psychology Library.** The Psychology Department maintains a small library that includes twenty major journals plus important reference works.
3. **Home Economics Library Resource Center.** Special resources available to graduate students include journals, carrels, and laboratory facilities with specialized equipment.
4. **Family, Home, and Social Sciences Computing Center.** The center assists faculty and students with social science data processing and other computing needs on mainframe and personal computers. Technical support and consultation services for both statistics and graphics are available to students working on research projects, theses, and dissertations. Special computer facilities in the Psychology Department include time-share systems. These allow the simultaneous gathering of acoustical and voice perception data from human subjects and the gathering of learning and behavioral economics data from animal subjects.

Laboratories

1. **Cartography Laboratory.** Housed in the Geography Department, this laboratory contains standard cartographic equipment plus a copy camera, a dark room, and printing facilities needed for map production. Students also have access to a geographic information system (using a VAX computer) shared with two other departments.
2. **Early Childhood Laboratories.** Associated with the Family Sciences Department, these excellent facilities provide a practicum setting in which graduate students develop skills in conducting and interpreting research involving small children.
3. **Psychobiology Research Laboratories.** These laboratories are equipped with facilities for analysis of the relationships between brain function and behavioral expression in animals. Specifically, brain anatomical analyses can be done, and patterns of brain electrical activity can be studied.

The college also provides additional research and academic support through the Camilla Eyring Kimball Chair of Home and Family Life, the Lemuel H. Redd, Jr., Chair in Western History, the J. Fish and Lillian F. Smith Chair of Economics, and the Family History Services unit.

DEPARTMENT OF ANTHROPOLOGY

Chairman and Graduate Coordinator: Donald W. Forsyth,
700 SWKT, 378-3058

Faculty/Specialties

Professors

- Berge, Dale L. (1968) Ph.D., University of Arizona, 1968.
Historical Archaeology; North America.
Matheny, Ray T. (1964) Ph.D., University of Oregon, 1968.
Archaeology, Ceramic Typology; Mesoamerica, Southwest.
Myers, Merlin G. (1963) Ph.D., Cambridge University, 1963.
Social Anthropology, North American Indians, Africa.

Associate Professors

- Ames, Walter L. (1984) Ph.D., University of Michigan, 1976.
J.D., Harvard University, 1979. Social and Applied Anthropology, Business, Law, Japan.
Forsyth, Donald W. (1979) Ph.D., University of Pennsylvania, 1979. Archaeology, Ceramic Analysis, Mesoamerica, Southwest.
Hawkins, John P. (1974) Ph.D., University of Chicago, 1978.
Social Anthropology, Ethnicity, Kinship and Family, Central America.

Assistant Professors

- Blakely, Thomas D. (1981) Ph.D., Northwestern University, 1981. Visual Anthropology, Semiotics, Proxemics, Anthropology in Practice, Sub-Saharan Africa.
Johnson, David J. (1987) Ph.D., University of Utah, 1987.
Archaeology, Archeometry, Ancient Trade, Middle East, Africa.

Graduate Program and Degree Anthropology (M.A.)

The aim of this program is to prepare (1) anthropologists capable of productive employment at a junior professional level upon receiving an M.A. degree, or (2) motivated students who desire to earn the Ph.D. degree in outstanding graduate programs elsewhere.

The subject emphasis is archaeology. The department's geographical specialties in archaeology are the Intermountain West (which verges into the southwestern cultural area in southern Utah), Mexico, Guatemala, and the Middle East. The university conducts field research in each of those areas, and students may participate. Also, historic site excavations in Utah, Illinois, and New York have given students experience at mining, military, village, and LDS Church history sites.

Rather than emphasizing specialized or topical interests, however, the program equips the graduate with the basics of professional anthropology: a broad and versatile perspective and the ability (1) to define a research problem, (2) to choose tools wisely for approaching it, (3) to gather and analyze data efficiently and creatively, and then (4) to communicate results and recommendations effectively.

Some assistantships, grants, and employment are offered by the department and the Museum of Peoples and Cultures, but the funds are limited. An attempt is made to provide support for as many students as possible rather than generously support a few. The Office of Public Archaeology division of the museum regularly gives employment and experience to students prepared to participate in contract archaeology projects with them.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Anthropology (M.A.)

Only a broad discussion of requirements is provided here. The department sends each prospective graduate student a detailed, step-by-step outline of expectations, requirements, and guidelines for progress through the program. The student must return a form indicating that he or she has read the detailed guidelines, understands them, and agrees to be governed by them. This is done because requirements sometimes change slightly in the interval between submission of catalogue copy and publication of the finished catalogue. By writing, calling, or visiting the department, prospective students will receive the most up-to-date and appropriate information.

Admission and Entry

- I. Deadlines: University deadlines apply.
- II. Entry times: Fall and winter semesters only.

Requirements for Degree

- I. Credit hours (30): Minimum 24 hours plus 6 thesis hours (Anthr. 699R); a minimum of 20 under direct instruction of professional anthropologists at BYU or in an equivalent department. Thesis, reading, internship, colloquium, and individual work do not count toward these 20 hours.
- II. Course work: Each student identifies two faculty members and obtains their consent to serve on his or her graduate committee. One of them will become chairman of the student's advisory committee, and the other will serve on it. The committee and the student agree on a curriculum plan.
- III. Thesis.
- IV. Examinations:
 - A. Written comprehensive examination at or near completion of required courses and before undertaking serious work on a thesis.
 - B. Oral defense of thesis.

Anthropology Minor

A minor in anthropology can add a cross-cultural perspective, useful for people with international or multicultural interests in the following majors or fields of interest: agricultural economics, nutrition, public health, education (either elementary or secondary), educational administration or counseling, political science, international relations, area studies, psychology, social work, sociology, art, communications, theatre and film, language, business administration, public administration, health administration, clothing and textiles, economics, family sciences, marriage and family therapy, geography, or history.

Requirement: Minimum 15 hours.

Program and Degree Resources

Charles Redd Center for Western Studies and Lemuel H. Redd, Jr., Chair in Western History
Joseph Fielding Smith Institute for Church History
Museum of Peoples and Cultures
New World Archaeological Foundation

ANTHROPOLOGY GRADUATE COURSES

506. History of Archaeology. (3) W alt. yr.

Historical development of methods, theory; key workers, literature. State of the field, current issues and trends.

534R. Social Institutions. (3) F, W, Sp

Graduate student enrolls in this course for higher-level work load while attending Anthr. 430, 431, 432, 433, 434, or 435.

537R. Communication and Culture. (3) F alt. yr., W

Graduate student enrolls in this course for higher-level work load while attending Anthr. 309, 420, or 437.

550. (Anthr.-Ling.) Sociolinguistics. (3) W

Research and theory in anthropological linguistics and sociolinguistics.

551. (Anthr.-Ling.) Anthropological Linguistics. (3) F

Language in culture and society: development, typology, and description.

554R. Field School Preparation. (1) W on dem.

555R. Advanced Field School of Archaeology. (3–6) Sp, Su

570. Museology Seminar. (3) W on dem.

Prerequisite: Anthr. 470.

575R. Supplementary Studies. (1–5) F, W, Sp, Su

For graduate student enrollment in courses taught at upper-division level. See graduate coordinator for details.

599R. Cooperative Education: Anthropology. (2–6) F, W, Sp, Su

On-the-job experience using anthropological data gathering, processing, and analysis skills.

600. Research Design. (3) W alt. yr.

Method and theory, particularly as these apply to the formulation of archaeological research.

610. Analytical Methods. (3) F alt. yr.

Current theoretical, methodological, and analytical aspects of contemporary archaeology.

620. Presentation. (2) W alt. yr.

Preparing professional communications.

655R. Field School Supervision. (2) Sp, Su

672. Special Scientific Techniques for Archaeology. (2) W alt. yr.

Dating and analytical techniques using methods of chemistry, physics, etc.

678R. Advanced Near Eastern Archaeology. (3) On dem.

Advanced student enrolls in this course for higher-level work load while attending Anthr. 351 or 378.

681R. Colloquium. (0.5) F, W

Student prepares scholarly paper and presents it to faculty and advanced students in second semester of enrollment. Guest lecturers.

690R. Seminar. (2–3) F, W

694R. Readings. (1–3) F, W, Sp, Su

Prerequisite: consent of supervising instructor.

Reading about 1,000 pages per credit hour and providing required products.

695R. Research. (1–3) F, W, Sp, Su

Prerequisite: consent of supervising instructor.

696R. Museum Projects. (1–3) F, W

Prerequisite: consent of supervising instructor.

697R. Field Research. (1–10) F, W, Sp, Su

Prerequisite: consent of supervising instructor.

699R. Master's Thesis. (1–9) F, W, Sp, Su

DEPARTMENT OF CLOTHING AND TEXTILES

Chairman: Marvin C. J. Kuchar, 3256 SFLC, 378-7175

The Department of Clothing and Textiles does not offer a graduate degree but conducts classes for students who have completed the baccalaureate degree and are seeking additional practical experience in the field. The following courses are available:

520R. Workshop in Clothing and Textiles. (1–3) On dem.

Prerequisite: consent of instructor.

545. Period Pattern Making. (3) W

Prerequisite: CITx 330, 355, or 356.

Applying costume history and pattern making to period fashions. Hands-on experience in actual costume construction for theatre productions.

595R. Special Topics in Clothing and Textiles. (1–3)

Prerequisite: 15 semester hours in clothing and textiles and consent of instructor

599R. Merchandising Internship. (4)

Prerequisite: CITx. 110, 255 or 272, 260, 372, 473, Acc. 201, 202, BusM. 241 or 341, 356, Comms. 102, Econ. 110, OrgB. 321, and departmental approval

15-week full-time work experience spent in fulfilling specific training assignments. Recommended elective for students in fashion merchandising. Design prerequisite: CITx. 260, 330, 365, 435, 450, and departmental approval.

Communications internship prerequisite: CITx. 269, 300, 490, and departmental approval. In-shop management internship prerequisite: CITx. 495 and departmental approval.

DAVID M. KENNEDY CENTER FOR INTERNATIONAL STUDIES

Director: Ray C. Hillam, 237-F HRCB, 378-7104

Graduate Coordinator: Earl H. Fry, 237-F HRCB, 378-2453

Graduate Program and Degree

International and Area Studies (M.A.)

Areas of Specialization

Asian Studies, International Development Studies, International Relations, Near Eastern Studies (Ancient).

The David M. Kennedy Center offers an interdisciplinary master of arts degree in International and Area Studies. Students select one of four different areas of emphasis:

- Asian Studies
- International Development Studies
- International Relations
- Near Eastern Studies (Ancient)

Course work is tailored to suit the student's individual interests and career direction, and the program is multidisciplinary. Each discipline is organized differently, but most have a flexible curriculum.

The M.A. program requires 31 semester credit hours (25 course work, 6 thesis) and may be completed in one year of full-time study. A student in the Near Eastern Studies (ancient) program may complete 31 credit hours of course work and defend two major research papers to satisfy the writing competency requirements.

Students are encouraged to have a meaningful international experience through participation in a university-sponsored program such as Study Abroad, the Washington Seminar, or an international internship.

Students with graduate degrees in international studies may pursue a wide range of careers, including government, international business and banking, public and private international agencies, teaching, research, and law. The broad liberal arts background acquired as part of an M.A. degree will be useful in nearly any professional field.

The M.A. in International and Area Studies is a strong preparation for doctoral study, law, or professional business schools. It may also serve to add an international dimension to a technical or vocational undergraduate degree, thereby giving the graduate who has international interests an edge in the career market. The M.A. is not, however, generally considered an ideal terminal degree for international business. Placement in international careers is highly competitive and often requires practical job skills in addition to the master of arts degree. Academic and career objectives should be carefully weighed to determine whether the M.A. degree will enhance graduate career opportunities.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS**International and Area Studies (M.A.)**

Admission is handled through the BYU Office of Graduate Studies. Application forms can be requested from Graduate Admissions, B-356 ASB, Provo, Utah 84602.

Applicants should complete all parts of the application form required by the university, with appropriate fees and transcripts, and indicate the department as International and Area studies, code 570168. The chosen area of emphasis should be entered on the application form where a specialization is requested.

Before applying, interested persons may make an appointment with Earl Fry, director of graduate studies, to evaluate the usefulness of an international studies degree for their career goals. Request general application information from Evie Forsyth, graduate secretary. Both can be reached at the David

M. Kennedy Center, 237 HRCB, BYU, Provo, Utah 84602, (801) 378-2389.

Admission and Entry

- I. The program is extremely competitive, and enrollment is limited to 16.
- II. Application requirements:
 - A. Deadline: April 15. Note that this is earlier than the general university deadlines. Moreover, it is recommended that applicants apply before this date.
 - B. Entrance examination:
 1. General GRE; score subject to review. An official copy of the test scores must be submitted to Graduate Admissions (B-356 ASB), and scores should be indicated on part D of the application form.
 2. Prelaw applicants may submit LSAT; score subject to review.
 3. Concurrent MBA applicants may submit GMAT; score subject to review.
 4. International applicants: only TOEFL required; minimum score of 580.
 - C. GPA: Minimum of 3.2.
 - D. Statement of intent: Indicate past intercultural experience, career goals, current professional skills, and how degree will be applied.
 - E. Three letters of recommendation from persons who can comment on applicant's academic ability, motivation, and interpersonal skills.
- III. Entry terms: Fall semester only; except summer term for Near Eastern Studies program.
- IV. Prerequisites:
 - A. Baccalaureate degree.
 - B. Undergraduate background in an international field, or satisfied deficiency.
 - C. Competency in a foreign language approved by committee chairman: 16 undergraduate credit hours including a 300-level conversation course; or other evidence of conversational fluency.
- V. Financial aid application deadline: April 15. Consult with the director of graduate studies for additional information regarding financial aid. The following financial aid is available:
 - A. Supplementary awards, which pay full or partial tuition for qualified students, awarded on basis of academic standing and need.
 - B. Research assistantships, paid positions requiring 5 to 10 hours work per week.
 - C. David M. Kennedy Graduate Fellow cash grants, given yearly to outstanding candidates selected by the graduate committee; no application required.

Requirements for Degree

- I. Credit hours (31): Thesis program—25 course work hours plus 6 thesis hours; nonthesis program—31 course work hours.
- II. Required courses: IAS 501R, Hist. 500R, PISC. 680, 697R. Other courses to be determined in consultation with faculty advisor.
- III. International experience encouraged: Study Abroad, Washington Seminar, international internship.
- IV. Thesis or two major research papers.
- V. Examination: Oral defense of thesis or research papers.

Concurrent Degree Program (M.A. and MBA)

The David M. Kennedy Center and the BYU Graduate School of Management have a special program whereby a student can earn an MBA degree and an M.A. degree in International and Area Studies concurrently, completing both degrees in a minimum of two and one-half years.

Application must be made to both the David M. Kennedy Center and the School of Management; however, parts B and C may be duplicated from the MBA application for use in the M.A. application.

Near East Summer Program

The center offers a full academic summer study program leading to an M.A. in Ancient Near Eastern Studies. Especially designed and scheduled for teachers in the public schools and the seminaries and institutes of the LDS Church, the program extends over five summers. No financial assistance is available to students involved in this program. During the academic year, the student may enroll in special reading courses on ancient Near Eastern topics. Those living in the Provo and Salt Lake City areas may take classes at the Provo campus or at the BYU Salt Lake Center.

- I. Prerequisites: Heb. 131, 132, 331.
- II. Course work in ancient languages, history, religions, art, and archaeology extending over five summers.
- III. One summer term may be spent in Israel. The student's academic advisor must approve study in Jerusalem.

INTERNATIONAL AND AREA STUDIES GRADUATE COURSES

501R. Graduate Colloquium. (1) F, W, Su

Methodologies and reading. Preparation for writing competency requirements and research paper presentation. Required of all International and Area Studies master's candidates.

599R. International Internship. (1-9) F, W, Sp, Su

Professional-level internship in an international setting. Class must be coordinated through Study Abroad office.

□ Near Eastern Studies 595R. Near East Special Topics. (1-3) F, W, Sp, Su

Studies based on individual and program needs.

699R. Master's Thesis. (1-6) F, W, Sp, Su

DEPARTMENT OF ECONOMICS

Chairman: Rulon D. Pope, 164 FOB, 378-3802

The Department of Economics does not currently offer a graduate degree but offers the following graduate courses:

580. Advanced Price Theory. (3)

Prerequisite: Econ. 380 and 386 or equivalent.

581. Advanced Macroeconomics. (3) F

Prerequisite: Econ. 380, 381, 386.

582. Welfare Economics. (3) W

Prerequisite: Econ. 380 and 386 or equivalent.

General equilibrium theorems and considerations that must guide applied economic work and provide quantitative information on the effects of alternative policy measures.

586. Mathematical Economics. (3)

Prerequisite: Econ. 380, 381, 386, or equivalent.

588. Econometrics. (3) W

Prerequisite: Econ. 380, 381, 386, 388, Stat. 321, or consent of instructor. Computer use fee.

600. Tutorial in Applied Economic Theory. (3)

Prerequisite: Econ. 580, 581, and consent of instructor.

680. Tutorial in Microeconomic Theory. (3)

Prerequisite: Econ. 580, 581, and consent of instructor.

681. Tutorial in Macroeconomic Theory. (3)

Prerequisite: Econ. 580, 581, and consent of instructor.

688. Tutorial in Econometric Theory. (3)

Prerequisite: Econ. 580, 581, 588, and consent of instructor.

697R. Research in Economics. (3) F, W, Sp, Su

Prerequisite: consent of instructor.

DEPARTMENT OF FAMILY SCIENCES

Chairman: Robert F. Stahmann, 1000 SW'KT, 378-2069

Graduate Coordinator: J. Joel Moss, 1054 SW'KT, 378-6709

Faculty/Specialties

Professors

Allred, G. Hugh (1966) Ed.D., University of Oregon, 1966.
Family of Birth Issues and Impact on Relationships.

Burr, Wesley R. (1969) Ph.D., University of Minnesota, Minneapolis, 1967. Developing and Applying Theories in Family Sciences

Cahoon, Owen W. (1970) D.Ed., Pennsylvania State University, 1970. Child Development and Early Childhood Education

Edwards, Kay P. (1974) Ph.D., Cornell University, 1969. Consumer Economics and Family Law.

Galbraith, Richard C. (1975) Ph.D., Northwestern University, 1975. Children's Intelligence and Memory.

Hoopes, Margaret H. (1970) Ph.D., University of Minnesota, Minneapolis, 1969. Couple Interaction Research, Birth Order of First Four Positions in the Family, Multigenerational Families.

Larsen, Jean M. (1963) Ph.D., University of Utah, 1972.
Effects of Preschool, Teacher Training, Care and Education of Young Children, Parent/Provider Training.

Mead, D. Eugene (1967) Ed.D., University of Oregon, 1967.
Marriage and Family Therapy.

Moss, J. Joel (1961) Ph.D., University of North Carolina, Chapel Hill, 1954. Family Life Education, Family in the Later Years.

Olson, Terrance D. (1974) Ph.D., Florida State University, 1972. Philosophy of Family Sciences, Quality Family Relationships.

Peery, J. Craig (1980) Ph.D., Columbia University, 1973.
Human Development, Personality and Social Development.

Stahmann, Robert F. (1975) Ph.D., University of Utah, 1967.
Premarital Counseling; Marital, Sexual, and Family Therapy.

Taylor, Barbara J. (1957) Ph.D., Brigham Young University, 1971. Curriculum Development, Administration and Teacher Training for Early Childhood Education.

Vance, Barbara Jane (1967) Ph.D., Stanford University, 1967.
Family Life Education.

Associate Professors

- Beutler, Ivan F. (1981) Ph.D., Purdue University, 1974. Family Resource Management.
Crane, D. Russell (1983) Ph.D., Brigham Young University, 1979. Marital Therapy and Divorce.
Draper, Thomas W. (1982) Ph.D., Emory University, 1976. Children and Technology, Men, Children.
Feinauer, Leslie L. (1984) Ph.D., Brigham Young University, 1981. Family Violence, Aging Families.
Harper, James M. (1979) Ph.D., University of Minnesota, Minneapolis, 1979. Marital and Family Therapy, Family Relationships.
Holman, Thomas B. (1985) Ph.D., Brigham Young University, 1981. Premarital and Marital Factors Relating to Later Marital Quality and Stability.
McKee, Trevor R. (1974) Ph.D., Brigham Young University, 1973. Language Acquisition and Duolinguual Parenting.

Assistant Professors

- Bahr, Kathleen S. (1970) Ph.D., Michigan State University, 1982. Family Ecology, Home Management and Family Relationships.
Poduska, Bernard E. (1983) Ph.D., Brigham Young University, 1983. Family Resource Management, Family Interaction.

Graduate Programs and Degrees

- Family Sciences (M.S.)
Marriage and Family Therapy (M.S.)
Family Sciences (Ph.D.)
Family Studies (Ph.D.)
Marriage and Family Therapy (Ph.D.)

Areas of Specialization

Early childhood education, family life education, family resource management, human development, clinical practice, teaching/supervision, research.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Family Sciences (M.S.)

The M.S. degree in family sciences provides the student with a comprehensive, broad-based understanding of the child and the family. Four specialties are available to the student according to his or her professional goals—early childhood education, family life education, family resource management, and human development.

Admission and Entry (same for all specialties)

- I. Application requirements:
 - A. Deadline: February 1.
 - B. Entrance examination: General GRE; score subject to review.
- II. Prerequisites:
 - A. Early Childhood Education: FamSc. 310, 420 or 422, 460; Stat. 552 or equivalent.
 - B. Family Life Education: FamSc. 310, 460; a course in statistical analysis; a course in research methods.
 - C. Family Resource Management: FamSc. 340, 371; Econ. 280; Stat. 552 or equivalent.

D. Human Development: FamSc. 310, 420; Psych. 301, 302, 341.

III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (36): Minimum 30 course work hours plus 6 thesis hours (FamSc. 699R).
- II. Required courses:
 - A. Early Childhood Education: FamSc. 514, 520, 522R, 560 or 660, 600, 622R, 623, 699R (6 hours minimum); Stat. 554 or Soc. 500.
 - B. Family Life Education: FamSc. 514, 560, 565, 600, 699R (6 hours minimum).
 - C. Family Resource Management: FamSc. 460, 540, 560, 570, 600, 699R (6 hours minimum); Stat. 554; 9 hours from FamSc. 545, 580, 675.
 - D. Human Development: FamSc. 510, 511, 512, 513, 514, 600, 602, 660, 699R (6 hours minimum); Stat. 501; PE—S 550; Psych. 346.
- III. Electives:
 - A. Early Childhood Education: 6–9 hours from FamSc. 465 (Modifying Family Systems: Principles and Practices—see BYU General Catalogue), 501R, 510, 511, 512, 513, 515, 590R, 595R, 665, 692R, or courses approved by advisory committee.
 - B. Family Life Education: 15–20 hours determined in consultation with advisory committee.
 - C. Family Resource Management: 6–9 hours from FamSc. 501R, 556, 590R, 595R, 601, 665; Econ. 315, or courses approved by advisory committee.
 - D. Human Development: As determined in consultation with advisory committee.
- IV. Minor: Any minor approved by advisory committee.
- V. Thesis.
- VI. Examination: Oral defense of thesis.

Marriage and Family Therapy (M.S.)

The department offers the master of science (M.S.) degree as a two-year program. The objective of this degree is to train persons who will be outstanding clinicians, prepared to function in a wide variety of marriage and family therapy settings. The curriculum is based on state licensure/certification requirements and is accredited by the Commission on Accreditation of the American Association for Marriage and Family Therapy. The master's degree is the basic credential for independent practice in marriage and family therapy.

The master's degree is a clinical and a research degree; therefore, a thesis is required.

Admission and Entry

- I. Application requirements:
 - A. Deadline: February 1.
 - B. Entrance examination: General GRE; score subject to review.
- II. Prerequisites: Background in research, e.g., research methodology and statistics (5 hours); behavioral sciences, e.g., personality, child development, abnormal psychology, learning theory (9 hours); social sciences, e.g., family living, social psychology, sociology (6 hours).
- III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (62): Minimum 56 course work hours plus 6 thesis hours (699R).

Family Sciences

- II. Required courses: FamSc. 461, 555R (6 hours), 560, 600, 640, 642, 643, 644, 645, 646, 647, 648, 649, 655R (12 hours), 699R (6 hours); Stat. 501 or Psych. 501; Psych. 611; electives (3 hours).
- III. Clinical requirement: 500 hours of direct client experience.
- IV. Thesis.
- V. Examination: Oral defense of thesis.

Family Sciences (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: February 1.
 - B. Entrance examination: General GRE; score subject to review.
- II. Prerequisite:
 - A. Regular candidates: Master's degree in family sciences or equivalent.
 - B. Human development specialty candidates: Master's degree in human development or equivalent; direct admission with a B.S. or B.A. degree is possible, but outlined course work would be integrated into doctoral program.
- III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (72 plus skill): Minimum 54 course work hours plus 18 hours dissertation, plus skill requirement.
- II. Required courses: Determined in consultation with advisory committee.
- III. Minor: Any minor approved by advisory committee.
- IV. Skill requirement: Consult department for details.
- V. Dissertation (18 hours minimum).
- VI. Examinations:
 - A. Written comprehensive examination.
 - B. Oral defense of dissertation.

For detailed information consult the department's Human Development Area coordinator.

Family Studies (Ph.D.)

Details for this program are specified in this catalogue under the heading Family Studies. The Family Studies Program operates as an interdepartmental program involving the Departments of Family Sciences and Sociology.

Marriage and Family Therapy (Ph.D.)

The program is accredited by the Commission on Accreditation for Marriage and Family Therapy Education of the American Association for Marriage and Family Therapy and has three interrelated emphases—clinical practice, teaching/supervision, and research.

There are two options for the Ph.D. degree in marriage and family therapy. The first is for students who already have a master's degree and should take approximately three years to complete. The second Ph.D. option is for the post-baccalaureate student and should take approximately four years to complete. The master's curriculum is followed during the first two years, with the M.S. degree awarded at the completion of those requirements.

Admission and Entry

- I. Application requirements:
 - A. Deadline: February 1.
 - B. Entrance examination: General GRE; score subject to review.

II. Prerequisites:

- A. Post-master's option: Master's degree from a regionally accredited college or university. Applicants without a marriage and family therapy master's degree may need to complete prerequisite course work.
- B. Post-baccalaureate option: Baccalaureate degree from a regionally accredited college or university; background in research, e.g., research methodology and statistics (5 hours); behavioral sciences, e.g., child development, abnormal psychology, learning theory (9 hours); social sciences, e.g., family sciences, psychology, social psychology, sociology (6 hours).

III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (80 plus skill beyond baccalaureate; 48 plus skill beyond master's): Minimum 62 course work hours beyond the baccalaureate or 30 course work hours beyond the master's, plus 18 dissertation hours (FamSc. 799R), plus skill hours.
- II. Required courses: Determined in consultation with advisory committee.
- III. Minor: Any minor approved by advisory committee.
- IV. Skill requirement: Consult department.
- V. Clinical requirement: 500 hours of direct client experience.
- VI. Dissertation.
- VII. Examinations:
 - A. Written and oral comprehensive examinations in clinical practice, teaching/supervision, and research.
 - B. Oral defense of dissertation.

Program and Degree Resources

Camilla Eyring Kimball Chair of Home and Family Life
Comprehensive Clinic
Family and Demographic Research Institute
Women's Research Institute

FAMILY SCIENCES GRADUATE COURSES

501R. Workshop in Family Sciences. (1–2)

Prerequisite: 8 hours in family sciences or consent of department chairman.

Intensive study in applying principles of specified family sciences, subject matter in early childhood education, child development, family relationships, family resource management, or marriage/family therapy.

510. Seminar in Intellectual Development. (3)

Prerequisite: FamSc. 514.

Current theories and research on intellectual development.

511. Seminar in Social Development. (3)

Prerequisite: FamSc. 514.

Current theories and research on social development, emphasizing positive social development. Play, music, creativity, and friendship.

512. Seminar in Emotional Development. (3)

Current theories and research on emotional development.

513. Seminar in Moral Development. (3)

Current theories and research on moral development.

514. Seminar in Theories of Human Development. (3)

Prerequisite: FamSc. 310.

Intensive investigation of theoretical frameworks, models, and concepts of dominant contemporary theories in child development.

520. Head Teachers Practicum in Preschool. (4)

Prerequisite: FamSc. 420 or 422 or equivalent classroom experience with young children and consent of instructor.

Head teaching proficiencies: guiding teachers of young children, techniques for involving parents, evaluating student teachers, assessing child performance, review of child guidance, and curriculum development.

522R. Seminar in Early Childhood Education. (2) F, W

Prerequisite: FamSc. 422 and consent of instructor.

Teacher skills: developing, applying, measuring, and evaluating effective techniques. Curriculum: selecting, organizing, and creating curriculum materials for young children.

540. Family Economics. (3)

Prerequisite: FamSc. 340 or equivalent or consent of instructor.

Economic functioning of household; role of income, employment, and household production as determinants of family living level.

545. Family Financial Resource Management. (3)

Prerequisite: FamSc. 340 or equivalent.

Applying theories and principles in managing financial resources to meet needs of individuals and families.

555R. Beginning Practicum in Marriage and Family Therapy. (3) F, W

Prerequisite: FamSc. 642 and consent of instructor.

Introduction to clinical methods and experience in counseling individuals, premarital and marital dyads, and families.

556. Interactional Interviewing Skills. (3)

Counseling theories, issues, and techniques as applied in family life education, child development, and related areas.

560. (FamSc.-Soc.) Contemporary Theories about the Family. (3)

Contemporary theories and research about the family, emphasizing role exchange and systems theories.

561. Seminar in Family Law. (3) W

Prerequisite: concurrent enrollment in FamSc. 461.

Intensive investigation of issues and concepts influencing legal aspects of marriage and family life.

562. Seminar in Professional Responsibility. (3)

Ethical issues and legal responsibility in professional practice.

565. Instructional Processes in Family Sciences. (3) F, Su

Instructional processes of design, development, implementation, management, and evaluation related to family sciences curriculum.

566R. Practicum in Family Life Education. (1-3)

F, W, Su

Prerequisite: FamSc. 565 or consent of instructor.

Supervised experience teaching family living courses in a university setting.

567R. Practicum in Marriage and Family Enrichment. (1-3) F, W

Prerequisite: FamSc. 565 or consent of instructor.

Supervised experience teaching enrichment programs on marriage, parenting, and management.

570. Advanced Home Management. (3)

Prerequisite: FamSc. 371 or equivalent.

Historical development of home management as a field of study. Theory and research, including family decision making, values, standards, and goals.

580. Economics of Consumption. (3)

Prerequisite: FamSc. 280, Econ. 280, or equivalent or consent of instructor.

Micro- and macroeconomic theory of consumer choice; historical development of empirical investigation; current research.

590R. Readings in Family Sciences. (1-2) F, W, Sp, Su

Prerequisite: FamSc. 310 or 460 and consent of instructor.

Discussions and reports of current readings.

595R. Special Topics in Family Sciences. (1-2) F, W, Sp, Su

Prerequisite: for family sciences major—FamSc. 310 or 460 and consent of instructor; for Independent Study associate degree major emphasizing family sciences—approval of this course with faculty advisor as final project.

Individual study for qualified students.

600. (FamSc.-Soc.) Advanced Research Methods. (3) alt. sem., Sp, Su

Prerequisite: Soc. 300 or consent of instructor.

Training in survey, experimental, secondary analysis, content analysis, qualitative, evaluation, and environmental impact research techniques.

601. (FamSc.-Soc.) Seminar in Survey Research. (3)

Prerequisite: Soc. 300 or equivalent.

Survey research techniques of the behavioral sciences, emphasizing research and sampling designs.

602. (FamSc.-Soc.) Experimental Design. (3)

Prerequisite: FamSc.-Soc. 600, Stat. 501 or equivalent, or consent of instructor.

Research methods, logic, writing, and data analysis.

603R. (FamSc.-Soc.) Research Practicum. (3)

Prerequisite: consent of instructor.

Design, data collection, data analysis, and write-up.

622R. Advanced Seminar in Early Childhood Education. (2) F, W

Prerequisite: FamSc. 422 and 522 or equivalent.

Supervision in ECE: practical experience in applying supervision principles. Administration of ECE: theories and issues applied to administrative processes and skills.

623. History, Theories, and Current Issues in Early Childhood Education. (3)

Prerequisite: consent of instructor.

History, background, philosophies, and models of preschool education. Examines current issues and innovations.

640. Marriage and Family Group Therapy. (3)

Prerequisite: FamSc. 643.

Applying group theories to individual, couple, and family problems. Group leadership experience required. For majors only.

641. Pharmacological Aspects of Family Therapy. (3) W

Survey of basic pharmacological principles as applied to family therapy, including anatomy and physiology of the nervous systems, to make application to pharmacologically categorized agents.

Family Studies

642. Introduction to Theories for Marriage and Family Therapy. (1.5) F

Prerequisite: FamSc. 460. Recommended: FamSc. 465.
Current theoretical models.

643. Group Procedures in Marriage and Family Therapy. (1.5) F

Prerequisite: FamSc. 642.

Group theories applied to individuals, couples, and families.

644. Psychodynamic Theory Applied to Marriage and Family Systems. (1.5) W

Prerequisite: FamSc. 642.

Object relations in marriage and the family.

645. Analysis and Treatment of Human Sexual Development. (3)

Prerequisite: FamSc. 642.

Knowledge and skill required to analyze and treat questions related to human sexual development.

646. Behavioral Analysis of Family Systems. (1.5) Alt. term

Prerequisite: FamSc. 642.

Behavioral and social learning theory applied to marital and family systems.

647. Assessment in Marriage and Family Therapy. (3)

Prerequisite: Stat. 501 or 552 or consent of instructor.

Background, development, administration, scoring, and interpretation of selected assessment instruments.

648. Adlerian Systems Analysis in Marriage and Family Therapy. (1.5) W

Prerequisite: FamSc. 465, 642.

Adlerian and Neo-Adlerian systems theories for preventative and corrective interventions in marriages and families. Options available for training in open-forum family therapy.

649. Systems Analysis for Marriage and Family Therapy. (1.5) Alt. sem., Sp, Su

Prerequisite: FamSc. 465, 642.

Applying systems theory in developing intervention for use with marriages and families.

655R. Intermediate Practicum in Marriage and Family Therapy. (1-4) F, W, Sp, Su

Prerequisite: FamSc. 642, 555R, or equivalent.

Experience in counseling individuals, premarital and marital dyads, families, groups of dyads, and multiple families.

660.(FamSc.-Soc.) Parent-Child Interaction. (3) Alt. yr.

Developing and testing conceptual models of parent-child interaction.

665. Theory and Practice in Family Life Education. (3)

Prerequisite: FamSc. 310 or 460.

Promoting learning and behavior change in families.

675. Human Resource Allocation and Development. (3)

Prerequisite: FamSc. 540, 570, or consent of instructor.

Influence of family decisions and economic factors in creation and use of human resources. Interaction of family decision making and public policy programs on human resource development.

692R. (FamSc.-Soc.) Seminar in Family Relationships. (1-3)

Premarital dyad, marital dyad, and issues in family interaction and familial roles.

699R. Master's Thesis. (6-9) F, W, Sp, Su

750R. Supervising Marriage and Family Therapy. (2) Sp, Su

Prerequisite: consent of instructor and doctoral student standing.

First term focuses on theory, research, and practice of supervising marriage and family counselors. Second term includes supervised experience.

755R. Advanced Practicum in Marriage and Family Therapy. (1-4) F, W, Sp, Su

Prerequisite: FamSc. 642, 655R, or equivalent.

791R. Seminar in Human Development. (1-2)

Prerequisite: must be a Ph.D. candidate in human development.

792R (FamSc.-Soc.) Family Symposium. (5) F, W, Sp, Su

Presentation and discussion of professional papers about the family.

793R. Seminar in Marriage and Family Therapy. (1-3) F, W

Integrated seminar sequence for doctoral students: professional issues, techniques, research, theory.

794R. Special Topics in Child Development. (1-2)

798R. Field Project. (1-9) F, W, Sp, Su

799R. Doctoral Dissertation. (1-9) F, W, Sp, Su

FAMILY STUDIES

Coordinator: Bruce A. Chadwick, 875 SWKT, 378-3374

The Family Studies Program is a doctoral program, jointly sponsored by the Sociology and Family Science departments; it awards the Ph.D. from one of the two departments. Requiring competency in family theory, research methods, statistics, and educational methods, the program trains individuals to be professional researchers and teachers. Competencies unique to the sociology option are sociological theory and one additional area such as social organization, social psychology, deviant behavior, race relations, or demography. Competencies unique to the family science option are child development, marriage and family therapy, family life education, and family resource management.

Graduate Program and Degree

Family Studies (Ph.D.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Family Studies (Ph.D.)

Admission and Entry

I. Admission requirements:

- A. Deadline: February 1. Applications should be submitted well before deadline to allow for graduate admissions processing.
- B. Sample of written work (i.e., master's thesis).

- II. Prerequisite: Master's degree or equivalent.
- III. Entry times: Usually fall semester, but under very unusual circumstances students may enter at other times.

Requirements for Degree

- I. Credit hours (66): Minimum 48 course work hours plus 18 dissertation hours (FamSc.-Soc. 799R).
- II. Required courses: FamSc.-Soc. 560, 600, 603R, 692R (9 hours or 6 hours plus 660), 792R (4 hours), 799R; FamSc. 565; Soc. 606, 706.
- III. Additional courses:
 - A. Family Sciences Department option: FamSc. 510, 511, 512 or 513; plus 514, 540, 556, 642, 665, 765.
 - B. Sociology Department option: Soc. 601, 610, 611, 700, 711, plus 6 hours from one of the following areas: demography and human ecology, deviant behavior, race and ethnic relations, social organization, social psychology.
- IV. Minor: Any approved.
- V. Skill requirement: Consult department.
- VI. Dissertation.
- VII. Examination: Oral defense of dissertation.

DEPARTMENT OF GEOGRAPHY

Chairman: Russell N. Horiuchi, 690-C SWKT, 378-3851

Graduate Coordinator: Lloyd E. Hudman, 624 SWKT, 378-4346

Faculty/Specialties

Professors

- Horiuchi, Russell N. (1961) Ph.D., University of Washington, 1975. Political Geography, Asia.
- Hudman, Lloyd E. (1970) Ph.D., University of Kansas, 1970. Urban Geography, Travel and Tourism.
- Jackson, Richard H. (1969) Ph.D., Clark University, 1970. North America, Culture, Planning.
- Layton, Robert L. (1954) Ph.D., Syracuse University, 1962. Latin America, Economics.
- Stevens, Dale J. (1966) Ph.D., University of California, Los Angeles, 1969. Weather, Europe, Alaska.

Associate Professors

- Grey, Alan H. (1964) Ph.D., University of Wisconsin, Madison, 1963. New Zealand, General.
- Hinckley, Thomas K. (1972) Ph.D., University of West Ontario, Canada, 1979. Cartography.

Graduate Programs and Degrees

- Cartography (M.S.)
- Geography (M.S.)
- Planning (M.S.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Cartography (M.S.)

Geography (M.S.)

Planning (M.S.)

This program is designed to provide a general background at the graduate level for either a terminal degree or preparation for more advanced work.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
- II. Prerequisites:
 - A. Undergraduate minor in geography or equivalent.
 - B. Strong language background for area studies emphasis.
 - C. Business mathematics or statistics background for business or industry emphasis.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Geog. 699R).
- II. Required courses: Geog. 601, 620, 630, 697R, 699R.
- III. Minor: Supporting courses chosen in consultation with committee.
- IV. Thesis.
- V. Examination: Oral defense of thesis.

GEOGRAPHY GRADUATE COURSES

502R. Seminar in Regional Geography. (2) W alt. yr.

504. Geographic Field Techniques. (2) F, alt. term
Methods of field data collection applied to physical, social, and biological sciences.

512. Cartography. (3) W

Prerequisite: Geog. 312.

520. Spatial Analysis. (3) F

Using quantitative and location-allocation models to determine and account for location of economic, social, religious, and public institutions in their service regions.

522. Urban Geography. (3) Alt. sem., alt. yr.

Distribution, development, internal land use patterns, and functions of urban areas in the world's economy.

533. Industrial Geography. (3) Alt. sem., alt. yr.

Analysis of distribution of major industries, emphasizing planning and location theory.

580. Geography of Underdeveloped Areas. (2) F alt. yr.

Prerequisite: consent of instructor.

Physical, economic, and human geography as it affects the world's underdeveloped areas, emphasizing future development possibilities.

598. Seminar in Techniques of Research and Presentation. (2) F

Proseminar in scholarly use of geographical sources, leading to a substantial paper in oral and written form.

599R. Cooperative Education. (1-9) F, W, Sp, Su
On-the-job experience.

601. Physical Geography. (2) W

620. Cultural Geography. (2) W alt. yr.

630. History and Philosophy of Geography. (2) Alt. term
Development of geographical thought. Major concepts concerning nature, scope, and methodology of the discipline.

690R. Readings. (1-2) F, W, Sp, Su

695R. Special Problems. (1-3) F, W, Sp, Su

697R. Seminar in Systematic Geography. (2) W
Detailed investigation of selected topics.

699R. Master's Thesis. (1-9) F, W, Sp, Su

DEPARTMENT OF HISTORY

Chairman: Paul B. Pixton, 323 KMB, 378-1335
Graduate Coordinator: D. Michael Quinn, 314 KMB,
378-5430

Faculty/Specialties

Professors

Addy, George M. (1957) Ph.D., Duke University, 1957. Colonial Latin America, Spain.
Alexander, Thomas G. (1964) Ph.D., University of California, Berkeley, 1965. Late 19th and 20th-Century United States, Western America, Mormon History.
Allen, James B. (1963) Ph.D., University of Southern California, 1963. U.S., Western America, Mormon History.
Britsch, R. Lanier (1966) Ph.D., Claremont Graduate School, 1967. Japan, India, Asian Religions.
Cardon, Louis B. (1960) Ph.D., University of California, Berkeley, 1965. 19th and 20th-Century European Diplomatic, International, and General History.
Flammer, Philip M. (1973) Ph.D., Yale University, 1963. Military, American Diplomatic History.
Fox, Frank W. (1971) Ph.D., Stanford University, 1973. Modern U.S., U.S. Cultural History.
Gowans, Frederick R. (1972) Ph.D., Brigham Young University, 1972. Western America.
Green, Arnold H. (1985) Ph.D., University of California, Los Angeles, 1973. Modern Near East.
Hill, Marvin S. (1966) Ph.D., University of Chicago, 1968. U.S. Intellectual and Social History.
Hyer, Paul V. (1957) Ph.D., University of California, Berkeley, 1960. Modern China, Modern Japan, China Border Areas.
Jensen, De Lamar (1957) Ph.D., Columbia University, 1957. Renaissance and Reformation, Early Modern Intellectual and Diplomatic History, Overseas Expansion of Europe.
Johnson, G. Wesley (1984) Ph.D., Columbia University, 1967. Community, Family, Africa.
Marlow, H. Carleton (1964) Ph.D., University of Oklahoma, 1966. Contemporary United States.
Montgomery, David C. (1970) Ph.D., Indiana University, Bloomington, 1971. Central Asia, Middle East, Central Asian and Middle Eastern Language.
Pixton, Paul B. (1974) Ph.D., University of Iowa, 1972. Medieval Europe.
Quinn, D. Michael (1976) Ph.D., Yale University, 1976. American Social History.
Thorpe, Malcolm Ray (1969) Ph.D., University of Wisconsin, Madison, 1972. Early Modern and Modern Britain.
Tobler, Douglas F. (1967) Ph.D., University of Kansas, 1967. Modern Germany, European Intellectual History.

Warner, Ted J. (1962) Ph.D., University of New Mexico, 1963. Spanish and Mexican Borderlands, American Indian, Western America.

Associate Professors

Chandler, David Lee (1970) Ph.D., Tulane University of Louisiana, 1972. Modern Latin America, Bolivarian States, Latin American Indian and Peasant.
Holmes, Blair R. (1971) Ph.D., University of Colorado, Boulder, 1972. European Family, Social History.
Pratt, David H. (1966) Ph.D., University of Nebraska, Lincoln, 1975. British Family, Modern English.
Wright, Norman Edgar (1964) MAG, Utah State University, 1958. Family and Local History.
York, Neil Longley (1977) Ph.D., University of California, Santa Barbara, 1978. Colonial History, Technology, American Revolution.

Assistant Professors

Bloxham, V. Ben (1964) Ph.D., University of Southampton, England, 1980. England, Local Histories.
Bohac, Rodney D. (1983) Ph.D., University of Illinois, 1982. Russia, Rural Europe.
Fox, William (1966) Ed.D., Brigham Young University, 1983. United States.
Johnson, Marian A. (1984) Ph.D., Stanford University, 1980. Art History, Africa, France.
Kenzer, Robert C. (1982) Ph.D., Harvard University, 1982. Family, 19th-Century America—South.
Stovall, Mary E. (1983) Ph.D., University of Chicago, 1983. Family, 19-Century America—South, 20th-Century Southern Novelists.
Westover, V. Robert (1971) Ph.D., Arizona State University, 1979. Family.

The following people in other departments have also been granted academic rank by the Department of History:

Griggs, C. Willfred. Greece and Rome.
Hall, John F., III. Greece and Rome.
Madsen, Carol Cornwall. LDS Church History.
Walker, Ronald W. LDS Church History.
Whittaker, David J. American West.

Graduate Programs and Degrees

History (M.A.)
History Teaching (M.A.)
History (Ph.D.)

In selecting a university for graduate study, a student should understand that no department will contain specialists in all areas. The Department of History at Brigham Young University offers both the M.A. degree and the Ph.D. degree in selected fields of strength, particularly those of early modern European, European and American social, western American, Mormon, family, community, and public history. Opportunity is provided for those whose primary career objectives are directed toward teaching at the secondary level, specialized research and teaching at the college/university level, or employment in the nonacademic sector. Students desiring a master's degree in Latin American, Asian, or Middle Eastern history should apply to the relevant program in the David M. Kennedy Center for International Studies.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

History (M.A.)

Emphases: American, modern European, family and community, or public history.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. At least three letters of recommendation from persons familiar with applicant's academic qualifications, preferably professors.
 - C. Sample of applicant's work: Send directly to the department a research paper such as a senior seminar paper.
 - D. Entrance examinations:
 1. Graduate Record Examination.
 2. Students whose native language is not English must pass the TOEFL examination at the 85 percentile or higher (a score of 582).
 - E. GPA: Minimum of 3.0 for last 60 hours.
 - F. Inquire of the History Department for further details before applying for admission.
- II. Prerequisite: Undergraduate degree in history or equivalent.
- III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Course requirements:
 - A. American history emphasis. Credit hours (30): Minimum of 24 course work hours including Hist. 587, 690R; two courses selected from Hist. 561, 562, 563; plus 6 thesis hours (699R).
 - B. European history emphasis. Credit hours (30): Minimum of 24 course work hours including Hist. 587, 690R; two courses selected from Hist. 551, 552, 553, 554; plus 6 thesis hours (699R).
 - C. Family and community history emphasis. Credit hours (30): Minimum of 24 course work hours including Hist. 587, 690R; six courses selected from the Hist. 590R, Problems in Family and Community History series; plus 6 thesis hours (699R).
 - D. Public history emphasis. Credit hours (39): Core courses (6 hours) Hist. 492, 495R; skills courses (6 hours) Hist. 422, 328, 397R, 500R; different "sectors" of public history (9 hours); internship Hist. 696R, (3 hours); American concentration, 6 hours from Hist. 561, 562, 563; research seminar, Hist. 690R; plus 6 thesis hours (699R).
- II. Minor: Optional as approved by advisory committee.
- III. Thesis.
- IV. Examination: Oral defense of thesis.

History Teaching (M.A.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. At least three letters of recommendation from persons familiar with applicant's academic qualifications, preferably professors.
 - C. Sample of applicant's work: Send directly to the department a research paper such as a senior seminar paper.
 - D. Entrance examinations:

1. Graduate Record Examination.
2. Students whose native language is not English are required to pass the TOEFL examination at the 85 percentile or higher (a score of 582).
- E. GPA: Minimum of 3.0 for last 60 hours.
- F. Inquire of the History Department for further details before applying for admission.

- II. Prerequisites:
 - A. Undergraduate degree in history or equivalent.
 - B. Current teaching contract.
- III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Credit hours (36): 36 hours minimum from graduate education (9 hours), history (21 hours), and professional education project (6 hours).
- II. Required courses: Hist. 500R and ScEd. 693R (3 hours) plus 9 hours from ScEd. 531, 601, 606, 649.

History (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. At least three letters of recommendation from persons familiar with applicant's academic qualifications, preferably professors.
 - C. A copy of applicant's master's thesis, sent directly to the department.
 - D. Entrance examinations:
 1. Graduate Record Examination.
 2. Students whose native language is not English are required to pass the TOEFL examination at the 85 percentile or higher (a score of 582).
 - E. GPA: Minimum 3.4 for last 60 hours.
 - F. Inquire of the History Department for further details before applying for admission.
- II. Prerequisite: Master's degree in history or equivalent.
- III. Entry time: Fall semester.

Requirements for Degree

The student should select either modern European history or American history as his or her major field. The other will become the secondary field, except in unusual cases and then only by prior written agreement by the department graduate committee and the student's committee chairman. All students will be required to take three of the four European core courses and all three American core courses.

A student may specialize in an area within the major field as approved by the departmental graduate committee and the committee chairman. Except in unusual cases, the fields of specialization in European history are Renaissance and Reformation, twentieth-century Europe, European diplomatic history, and European social history. Except in unusual cases, the fields of specialization in American history are western America, history of religion in America, and American social history.

- I. Credit hours (54 beyond baccalaureate): Minimum 36 course work hours beyond the baccalaureate plus 18 dissertation hours (Hist. 799R).
- II. Course requirements:
 - A. First year in residence: Hist. 587, Hist. 690R.
 - B. Core courses for European history emphasis: 551, 552, 553, 554.
 - C. Core courses for American history emphasis: 561, 562, 563.

- D. Other courses to be determined by advisory committee.
- E. Specialized courses: Hist. 655R and 664R are specialized courses and may be repeated for credit as often as required by the student's committee. The topics of these specialized courses will vary, but generally they will be related to the areas of specialization listed above.
- III. Progress review: After 18 hours of course work, there will be a progress review in which the student's graduate committee will determine whether the student has proved competent to remain in the program. Students should finish all course work and tool requirements and pass the written comprehensive examinations within three years after beginning the program.
- IV. Skill requirement: Consult department.
- V. Dissertation prospectus: Presented upon successful completion of the oral examination.
- VI. Dissertation.
- VII. Examinations:
 - A. Written comprehensive examinations: A Ph.D. candidate will offer for comprehensive examination a general field (major area), a field of specialization within that general field, and a secondary field in history. The candidate will also present a minor field outside history, chosen in consultation with the committee chairman.
 - B. Oral comprehensive examination: Given three months after student successfully passes the written comprehensive examination.
 - C. Oral defense of dissertation.

Program and Degree Resources

Camilla Eyring Kimball Chair of Home and Family Life
 Center for Family and Community History
 Charles Redd Center for Western Studies and Lemuel H. Redd, Jr., Chair in Western History
 Family and Demographic Research Institute
 Family History Services
 Joseph Fielding Smith Institute for Church History
 Museum of Peoples and Cultures
 Women's Research Institute

HISTORY GRADUATE COURSES

Greek and Roman History Courses

The responsibility for staffing and administering courses in Greek and Roman history lies with Classics (see Humanities, Classics, and Comparative Literature). Beyond the cross-listed and box-listed courses in the following history courses, historical topics are also occasionally offered under ClCv. 340R, Latin 625R and 690R, Greek 625R and 690R, and ClCs. 490R and 690R as announced in the Class Schedule. Such historical courses may count toward a graduate major in history. An M.A. degree emphasizing Greek and Roman history is offered under Classics.

- Greek 530. Thucydides. (3)
- Latin 530. Tacitus. (3)

630R. (Hist.-Clcs.) Topics in Greek and Roman History. (3)

Prerequisite: Greek 201 (Greek topics) or Latin 201 (Roman topics).

Topics vary (e.g., Rise of the Greek city-state, Greek political thought, Classical historiography, Rome and the Etruscans, imperial Rome).

GENERAL HISTORY GRADUATE COURSES

500R. Special Studies in History. (1–3)

Directed by visiting or resident faculty. Check with department secretary for current topics and instructor. Will frequently deal with archives and manuscripts.

551. Sources and Problems in Renaissance and Reformation. (3)

Selected topics in the Renaissance and Reformation. Part of the core curriculum for graduate students.

552. Sources and Problems in Early Modern Europe, 1550–1789. (3)

Selected topics in early modern Europe, 1550–1789. Part of the core curriculum for graduate students.

553. Sources and Problems in Nineteenth-Century Europe, 1789–1914. (3)

Selected topics in nineteenth-century Europe, 1789–1914. Part of the core curriculum for graduate students.

554. Sources and Problems in Twentieth-Century Europe Since 1914. (3)

Selected topics in twentieth-century Europe since 1914. Part of the core curriculum for graduate students.

561. Sources and Problems in Early America. (3)

Through the seventeenth and eighteenth centuries. Required of American and European history graduate students.

562. Sources and Problems in Nineteenth-Century America. (3)

Through the nineteenth century. Required of American and European history graduate students.

563. Sources and Problems in Twentieth-Century America. (3)

Through the twentieth century. Required of American and European history graduate students.

587. Philosophies of History. (3)

Fundamental problems and types of historical analysis and interpretation, philosophies of history, and work of outstanding historians.

590R. Problems in Family and Community History. (3)

Advanced study in family or community history. Numerous sections available in social, family, community, oral, and quantitative history, and writing in history. Course title varies. Consult Class Schedule.

592. Introduction to Public History. (3)

How historians contribute outside the university setting: museums, government, business, archives, consulting, etc.

598R. Special Readings in History. (1–2)

610. War and Diplomacy in the Twentieth Century. (3) W

Analysis of modern wars, emphasizing conditions and policies conducive to war or peace: diplomacy, alliances, arms races and disarmament, ideologies; regional and national conflicts.

640R. Problems in Asian History. (3)

Prerequisite: some previous study of Asia.

Analysis and interpretation of selected problems and themes, based on broadly selected readings.

648R. Asian Thought and Culture. (3)

Prerequisite: Hist. 340, 341.

Reading and analysis of important institutions and aspects of Asian development.

650R. Problems in Latin America. (3)

Prerequisite: Hist. 351, 352.

Advanced study of the general historical development of Latin America—colonial and national periods.

655R. Problems in European History. (3)

Intensive, specialized study of selected topics. Subject matter will vary each semester but may include Renaissance, Reformation, twentieth-century, diplomatic, and social history. Course title varies. Consult Class Schedule.

664R. Problems in American History. (3)

Intensive, specialized study of selected topics. Subject matter will vary each semester but may include American religious, social, western, Mormon, and Utah history. Course title varies. Consult Class Schedule.

690R. Graduate Seminar in History. (1–3)**695R. Coordinated Research. (3)**

Student research directed by faculty member on topic of mutual interest. Prior approval of instructor required. Research assistants must do additional work for credit.

696R. Internship in Public History and Historical Preservation. (1–5)

College credit for work in local archives, museums, and related areas. See department chairman for openings available and to determine hours of credit.

698R. Master's Project. (1–6)**699R. Master's Thesis. (1–9)****798R. Special Readings in History. (1–2)****799R. Doctoral Dissertation. (1–18)**

DEPARTMENT OF HOME ECONOMICS

Chairman: Carol Ellsworth, 2234 SFLC, 378-3914

Graduate Coordinator: Carolyn Garrison, 2230-B SFLC, 378-6417

Faculty/Specialties

Professor

Brasher, Ruth E. (1969) Ph.D., Utah State University, 1969.

Family and Social Systems, Theoretical Foundations of Home Economics, Adult Education.

Associate Professor

Lind, Charlene (1964) Ph.D., University of Wisconsin, 1974.
Social/Psychological Aspects of Clothing.

Assistant Professors

Ellsworth, Carol (1969) Ed.D., Brigham Young University, 1980. Curriculum and Instruction.

Garrison, Carolyn (1970) Ph.D., Purdue University, 1978.

Household Equipment and Housing, Adult Education.

Ormsby, Patricia Marie (1982) Ph.D., Michigan State University, 1982. Home Management, Cross-cultural Home Economics.

Thackeray, Renee (1973) M.S., Oregon State University, 1960.
Textiles, Social/Psychological Aspects of Clothing.

Graduate Program and Degree

Home Economics Education (M.S.)

The master's degree program in Home Economics allows a master's candidate to develop a course of study that meets personal and professional goals, interests, and background within the framework established by the department. The master's program accommodates part-time as well as full-time students. The courses are rotated so that, over a period of three years, all graduate courses in home economics are offered in a summer term. In addition, courses are taught late afternoons or evenings during the school year to enable teachers in the local area to enroll. Full-time students are able to complete the required courses during one calendar year. Additional time is required to complete the research-thesis component of the program.

Areas of Specialization

Programs may focus on the cross-cultural, instructional, or curricular aspects of home economics education.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Home Economics Education (M.S.)

Admission and Entry

- I. Application requirements:
Deadlines: University deadlines apply.
- II. Prerequisite: Undergraduate emphasis in home economics education.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (HmEc. 699R).
- II. Required courses: HmEc. 532, 630, 650. Stat. 552 and FamSc.-Soc. 600 must be completed as prerequisite courses but do not count toward the 24 course work hours required.
- III. Recommended courses: HmEc. 530, 689.
- IV. Required courses for international emphasis: HmEc. 532, 630, 660, 662, 689.
- V. Thesis.
- VI. Examination: Oral defense of thesis.

HOME ECONOMICS GRADUATE COURSES

521R. Workshop in Home Economics Education. (1–2)

Prerequisite: consent of instructor.

530. Home Economics Education for Adults. (2)

Prerequisite: home economics education background.

Principles, practices, programs, materials, and resources for teaching adults.

532. Program Evaluation in Home Economics Education. (2)

Prerequisite: ScEd. 476R or consent of instructor.

Evaluation techniques and construction of evaluation devices unique to home economics.

535. Advanced Household Equipment. (3)

Prerequisite: HmEc. 335 and 336 or equivalent or consent of instructor.

Study and experimental problems of fabric care and food-related appliances.

630. Methods and Curriculum in Home Economics Education. (3)

Advanced methods and curriculum development for all spheres of home economics education programs.

650. Organization and Administration of Home Economics Education Programs. (3)

Implications of organization and administration in relation to institutions, learners, general public, and programs.

660. Home Economics Cross-Cultural Field Experience. (1-3)

Supervised in-field experience to plan, implement, and evaluate a project or assist in an ongoing program.

662. Human Ecology in Developing Countries. (3)

Interdisciplinary seminar on problems common to families in Third World countries and current approaches to basic needs.

664. Data Collection in Developing Countries. (1)

Unique aspects of research applied to field experiences in developing areas.

689. Theoretical Foundation of Home Economics Education. (3)

Social and educational forces that affect individuals, families, and the profession.

693R. Independent Readings and Conferences. (1-3) F, W, Sp, Su

699R. Master's Thesis. (1-9) F, W, Sp, Su

DEPARTMENT OF POLITICAL SCIENCE

Chairman: Dennis L. Thompson, 745 SWKT, 378-3423

Graduate Program and Degree
Political Science (M.A.)

The Department of Political Science currently offers only a joint B.A./M.A. degree in public policy analysis. Undergraduate students interested in this program should consult with the department or refer to the BYU General Catalogue.

DEPARTMENT OF PSYCHOLOGY

Chairman: Gary L. Bunker, 1001 SWKT, 378-4287

Graduate Coordinator: Kenneth L. Higbee, 1092 SWKT, 378-6363

Faculty/Specialties

Professors

- Bennion, Robert C. (1961) Ph.D., Ohio State University, Columbus, 1961. Social Learning and Personal Construct Theories.
- Bergin, Allen E. (1972) Ph.D., Stanford University, 1960. Psychology and Religion, Personality Theory.
- Brown, Bruce L. (1968) Ph.D., McGill University, Montreal, 1969. Psycholinguistics, Statistics and Research Methods.
- Bunker, Gary L. (1970) Ph.D., University of California, Berkeley, 1966. Prejudice and Intergroup Relations.
- Cundick, Bert P. (1962) Ph.D., Ohio State University, Columbus, 1962. Child Development and Psychodiagnostics.
- Daniels, Philip B. (1961) Ph.D., Harvard University, 1962. Interpersonal Relationships Within Groups, Leadership Training.
- Fleming, Donovan E. (1971) Ph.D., Washington State University, 1962. Brain Development and Behavior.
- Hardy, Kenneth R. (1954) Ph.D., University of Michigan, Ann Arbor, 1954. Human Motivation, Adult Development.
- Higbee, Kenneth L. (1970) Ph.D., Purdue University, 1970. Research Methodology, Memory.
- Howell, Robert J. (1952) Ph.D., University of Utah, 1951. Psychopathology, Forensic Psychology.
- Jensen, Larry C. (1965) Ph.D., Michigan State University, 1966. Human Development with a Focus on Moral Reasoning and Behavior.
- Lambert, Michael J. (1971) Ph.D., University of Utah, 1971. Research in Psychotherapy Process and Outcome.
- Miller, Harold L., Jr. (1975) Ph.D., Harvard University, 1975. Experimental Analysis of Learning and Motivation.
- Payne, I. Reed (1964) Ph.D., Pennsylvania State University, 1963. Criminal Behavior, Therapeutic Techniques.
- Pedersen, Darhl M. (1962) Ph.D., University of Illinois, Urbana, 1962. Quantitative Methods, Personality, Environmental Psychology.
- Robinson, Paul W. (1969) Ph.D., Utah State University, 1973. Behavior Modification, Analytical Methodology.
- Smith, Kay H. (1961) Ph.D., Wayne State University, 1962. Group Dynamics and Assessment of Interpersonal Skills.
- Stimpson, David V. (1964) Ph.D., University of California, Berkeley, 1964. Behavioral and Personality Correlates of Persuasibility, Organizational Psychology.
- Weight, David G. (1969) Ph.D., University of Washington, 1969. Psychopathology, Assessment.

Associate Professors

- Barlow, Sally H. (1978) Ph.D., University of Utah, 1978. Individual and Group Therapy, Sex Role Differences.
- Wood, Larry Eugene (1977) Ph.D., University of Iowa, 1971. Artificial Intelligence, Cognitive Psychology.

Assistant Professor

- Williams, Richard N. (1981) Ph.D., Purdue University, 1981. Psycholinguistics, Theoretical and Philosophical Foundations of Social Psychology.

Graduate Programs and Degrees

Experimental Psychology (M.S.)
 General Psychology (M.S.)
 School Psychology (Specialist)
 Clinical Psychology (Ph.D.)
 Experimental Psychology (Ph.D.)
 Instructional Psychology (Ph.D.)
 Social Psychology (Ph.D.)

PROGRAM AND DEGREE REQUIREMENTS**Experimental Psychology (M.S.)****Admission and Entry**

- I. Application requirements:
 - A. Deadline: January 31.
 - B. Entrance examination: General GRE; score subject to review.
 - C. GPA: Minimum of 3.0 for last 60 hours.
- II. Prerequisites: Completion of the following undergraduate courses or their equivalents: general psychology; elementary psychological statistics; experimental psychology; three courses from sensation and perception, motivation, personality, principles of learning.
- III. Entry time: Fall semester.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (699R).
- II. Required courses: 6 hours of independent research (797R); B grade or better in Psych. 501 or Stat. 501 and in three of the following: an advanced graduate seminar, Psych. 510, 560, 565, 575, 585.
- III. Electives: Determined in consultation with advisory committee.
- IV. Thesis.
- V. Examination: Final oral examination on course work and defense of thesis.
- VI. For additional information, direct inquiries to the Experimental Psychology Committee.

Integrated Program

Students interested in combining requirements for the B.S. degree in psychology with those for an M.S. degree in experimental psychology may do so in a special five-year program. The program's emphasis is on productive research that will enhance opportunity for employment or further graduate training. Applications for entrance into the program will be reviewed by the Experimental Psychology Committee during October and February. Students should be in at least their junior year of study when beginning the combined program.

Note: Whether or not a student has been admitted to the integrated program by the Psychology Department, a formal university graduate application is required. A student who plans to obtain the baccalaureate degree before entering the master's program still needs to plan on more than one year to complete the M.S. program.

General Psychology (M.S.)

The master's degree in general psychology provides advanced education in preparation for application to doctoral programs; community college, junior college or high school teaching; and general strengthening of expertise in psychology. It is not intended as a terminal professional degree.

Admission and Entry

- I. Application requirements:
 - A. Deadline: January 31.
 - B. Entrance examination: General GRE; score subject to review.
 - C. GPA: Minimum 3.0 for the last 60 hours.
- II. Prerequisites:
 - A. Baccalaureate degree in psychology (other fields will be considered).
 - B. Undergraduate major in psychology desirable. Previous course work should include general psychology, elementary psychological statistics, experimental psychology, and three additional psychology courses.
- III. Entry time: Fall semester.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (699R).
- II. Required courses: B grade or better in Psych. 501 and 502 (first two semesters in residence); and in three of the following: Psych. 510, 520, 540, 551, 560, 565, 575, 585.
- III. By the end of the first semester students must select their advisory committee, submit their study list, and schedule their thesis prospectus review.
- IV. Electives: Determined in consultation with advisory committee.
- V. Thesis.
- VI. Examination: Final oral examination on course work and defense of thesis.

School Psychology (Specialist)

The school psychology program is an interdepartmental program that is operated by the Departments of Psychology and Educational Psychology. After completing a 36-semester-hour master of education degree, students may make application to the Department of Psychology for the 66-hour psychological specialist degree (30 hours beyond the M.Ed.). Students complete the research portion of the training program in the Department of Psychology in conjunction with the specialist degree and conduct their research project under the direction of a two-member committee they have selected.

Admission and Entry

- I. Application requirements:
 - A. Deadline: January 31.
 - B. Entrance examination: General GRE; score subject to review.
- II. Prerequisites:
 - A. M.Ed. degree.
 - B. Adequate background in both psychology and education; undergraduate major in one or the other preferred.
 - C. Required course work: Courses in learning, personality, child psychology, exceptional children, statistics, school organization and administration.
- III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (30): Minimum 30 course work hours beyond the M.Ed.

- II. Practical experience.
 - A. Beginning the first semester, supervision from practicing school psychologists: 4 to 8 hours per week in school setting.
 - B. Paid internship ordinarily provided in local school district, the equivalent of three days a week for a full school year for second-year students.
- III. Certification requirements.

Note: Most states require the certification of practicing school psychologists. Early in the program students should examine the certification requirements of the state or states in which they may wish to work. Requirements for a specific state may be obtained by writing to that state's department of education. A file of some state requirements is available from James M. Harris in the Department of Educational Psychology.

DOCTORAL DEGREES

Specialized programs leading to the doctor of philosophy degree are offered in the areas of clinical, experimental, and social psychology. In addition to these programs, a doctoral degree in instructional psychology is jointly offered by the Departments of Psychology and Educational Psychology. As is the case with the master's degree, students will have an advisory committee to supervise their doctoral work.

Clinical Psychology (Ph.D.)

The clinical training program at Brigham Young University is an American Psychological Association-accredited program leading to the Ph.D. degree. This program, which includes an internship, is designed to be completed in five years. Candidates with varied backgrounds and strong academic and clinical promise are recruited.

The philosophy of the clinical training program adheres to the scientist-practitioner model, emphasizing research methodology as well as the theory and practicum necessary to develop strong clinical skills.

The program at Brigham Young University is eclectic in its theoretical approach, drawing from a wide range of theories and orientations in an attempt to give broad exposure to a diversity of traditional and innovative approaches.

Admission and Entry

- I. Application requirements:
 - A. Deadline: January 31.
 - B. Entrance examination: General GRE; score subject to review.
- II. Prerequisite: Background in introductory psychology, statistics, experimental psychology, personality, abnormal psychology, learning, and testing.
- III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (78 plus skill): Minimum 60 course work hours plus 18 dissertation hours (799R), plus skill requirement hours.
- II. Required core courses:
 - A. Measurement: Psych. 500R.
 - B. Ethics and standards: Psych. 609.
 - C. Research methodology: Psych. 500R (6 hours).
 - D. Statistics: Psych. 501, 502.
 - E. History and systems: Psych. 510.
 - F. Biological bases of behavior: Psych. 585.
 - G. Cognitive-affective bases of behavior: Psych. 560, 565, or 575.

H. Social bases of behavior: Psych. 531, 551, 555, or 637.

- I. Individual differences: Psych. 520, 611, 647, 675.

Required courses in necessary sequence:

First Year, Fall
Psych. 585, 609, 611, 622, 741R, 744R, electives.
First Year, Winter
Psych. 624, 632, 675, 741R, 744R, electives.
First Year, Spring
Psych. 520, 647, electives.
First Year, Summer
Electives.
Second Year, Fall
Psych. 501, 623, 633, 741R, 743R, electives.
Second Year, Winter
Psych. 500R (Measurement), 502, 741R, 743R, electives.

Second Year, Spring
Electives.

Second Year, Summer
Electives

Third Year, Fall
Psych. 500R (Design), 637, 741R, 743R, electives.
Third Year, Winter
Psych. 500R (Clinical), 634, 638, 741R, 743R, electives.

Third Year, Spring
Electives

Third Year, Summer
Electives.

Fourth Year
Psych. 799R, electives.

- IV. Specialization: A selection of 12 hours from a specialized area such as neuropsychology, clinical research, family therapy, community psychology, mental retardation, psychopathology, forensic psychology, psychotherapy, or psychodiagnostics is normally completed during the student's second and third year.

- V. Skill requirement: Psych. 500R, 501, 502 (three 3-hour registrations in measurement, design, and clinical research).

- VI. Internship: One-year internship in a setting approved by clinical director. Before going on internship, students complete all classes (except Psych. 745 through 748), comprehensive examinations, and dissertation.

- VII. Dissertation.

- VIII. Examinations:

- A. Written and oral comprehensive examinations. Comprehensive examinations are to be taken in August of the first year, in May and August of the second year, and in October and June of the third year.
- B. Oral defense of dissertation.

For additional information about the training program, write to Director of Clinical Training, Department of Psychology, Brigham Young University, Provo, Utah 84602. Phone (801) 378-4050.

Experimental Psychology (Ph.D.)

The doctoral program in experimental psychology offers a rigorous educational experience leading to the Ph.D. degree.

Two major areas of research specialty exist within the program: (1) biobehavioral psychology (the experimental analysis of behavior, psychobiology, and sociobiology) and (2) cognitive psychology (information processing, memory, psycholinguistics, and problem solving). Although fundamental emphasis is placed on laboratory research and the attendant skills in experimental design, methodology, and data analysis, the doctoral student is expected to be conversant with the major content areas in experimental psychology as well.

At some point in the first year, students will select a faculty advisor and an advisory committee. In collaboration with the committee, they will prepare a study list that should provide a chronological sequence of classes that will satisfy curricular requirements for the Ph.D. degree. Students must complete a minimum of 18 hours of Psych. 799R. The remainder of the study list will be given careful consideration by the advisory committee before it is approved for submission to the Office of Graduate Studies. Because considerable latitude is given to students in the design of the study list, it is expected that its development will be guided by personal interests as well as by the realities of the postgraduate marketplace.

Admission and Entry

- I. Application requirements:
 - A. Deadline: January 31.
 - B. Entrance examination: General GRE; score subject to review.
- II. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (72 plus skill): Minimum 54 course work hours plus 18 dissertation hours (799R) and skill requirement hours.
- II. Electives: Determined in consultation with advisory committee.
- III. Specializations: Biobehavioral psychology or cognitive psychology.
- IV. Skill requirement: 18 to 21 hours of undergraduate studies in the Departments of Mathematics, Statistics, and Computer Science as approved by advisory committee.
- V. Dissertation.
- VI. Examinations:
 - A. Written and oral comprehensive examinations.
 - B. Oral defense of dissertation.

Further details of the doctoral program are available from the Experimental Psychology Committee.

Instructional Psychology (Ph.D.)

The doctoral program in instructional psychology is offered jointly with the Department of Educational Psychology in the College of Education. The program prepares one for academic and/or research positions in universities, colleges, school systems, government, churches, industry, and other organizations working with the development of instructional systems.

Admission and Entry

- I. Application requirements:
 - A. Deadline: January 31.
 - B. Entrance examination: General GRE; score subject to review.
- II. Prerequisites: ELDR 517 or Engl. 316; Comms. 272, IndE. 250, or EPsy. 587.
- III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (76 plus skill): Minimum 58 course work hours plus 18 dissertation hours (799R) and skill requirement hours.
- II. Required courses: Psych. 560 or EPsy. 620; EPsy. 564, 652, 661.
- III. Specialization: 18 hours from Psych. 520, 531, 535, 551, 560, 565, 575, 585, 655, 678R.
- IV. Skill requirement: EPsy. 515R (Microcomputers), 560, 651, 672; Stat. 502 or Psych. 502.
- V. Project: 9 hours.
- VI. Internship: 12 hours minimum.
- VII. Dissertation.
- VIII. Examinations:
 - A. Written comprehensive examinations.
 - B. Oral defense of dissertation.

Social Psychology (Ph.D.)

The social psychology doctorate program offers the choice of two areas of specialization: (1) experimental social psychology and (2) organizational psychology. Both specialties share a common core of courses that offer broad exposure to the content areas of general psychology, along with extensive training in research.

Admission and Entry

- I. Application requirements:
 - A. Deadline: January 31.
 - B. Entrance examination: General GRE; score subject to review.
- II. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (72 plus skill): Minimum 54 course work hours plus 18 dissertation hours (799R) and skill requirement hours.
- II. Required core courses to be completed by the end of the second year of residence.
 - A. General psychology: Psych. 501, 502, 540, 560, 565, 575 or 585.
 - B. Social psychology: Psych. 551, 555, 600R, 650R (6 hours).
 - C. Students in the organizational psychology specialization also take Psych. 631 and a supervised practicum.
- III. Specializations: Experimental social psychology or organizational psychology.
- IV. Other required courses: Determined in consultation with advisory committee.
- V. Skill requirement: 18 to 21 hours of undergraduate studies in the Departments of Mathematics, Statistics, and Computer Science as approved by advisory committee.
- VI. Dissertation.
- VII. Examinations:
 - A. Written comprehensive specialty examination on social psychological theory and research at the beginning of the third year of residence.
 - B. Oral defense of dissertation.

PSYCHOLOGY GRADUATE COURSES

500R. Research Methods. (3) F, W

Intermediate course for first-year graduate psychology student, focusing on methodological tactics rather than statistical skills.

501. **Data Analysis in Psychological Research I.** (5) F
Prerequisite: Psych. 301 or Stat. 221.

Using and interpreting major quantitative methods in psychology and some commonly used computer methods.

502. **Data Analysis in Psychological Research 2.** (5) W
Prerequisite: Psych. 501 or consent of instructor.

Advanced correlational methods, factor analysis, analysis of covariance, multiple regression, linear models, and experimental design.

510. **History and Systems of Psychology.** (3)

A survey of the origins and development of modern psychology, including consideration of the schools and theoretical systems.

520. **Advanced Developmental Psychology.** (3)

Major research in developmental psychology, emphasizing theory, content, and methodology.

531. **Organizational Psychology.** (3)

Personal and interpersonal aspects of organizational life: goal setting, decision making, problem solving, communication, control, leadership, motivation, and change.

535. **Behavior Modification Techniques.** (3)

Practical application of behavior modification to academic discipline, and emotional target behaviors of individuals and groups.

540. **Personality Theory.** (3)

Prerequisite: Psych. 341 and 5 additional hours in psychology.

Contemporary theories of personality developed within the framework of major psychological systems.

551. **Theory and Research in Social Psychology.** (3)

Prerequisite: Psych.-Soc. 350 or consent of instructor.

Current theories and research on interaction with others.

555. **(Psych.-Soc.) Group Dynamics.** (3)

Prerequisite: Psych.-Soc. 350.

Theories and research on small-group processes and mass behavior.

560. **Learning Theory.** (3)

Prerequisite: Psych. 361 and 5 additional hours in psychology.

Critical review of current theories and persistent problems.

565. **Motivational Psychology.** (3)

Prerequisite: Psych. 365 or equivalent; graduate standing or consent of instructor.

Theoretical, historical, and empirical overview; recent trends and issues; role of animal studies; methodological problems.

575. **Cognitive Processes.** (3)

Prerequisite: Psych. 370 and 375 or equivalent; graduate standing or consent of instructor.

Major theoretical and empirical developments. Interaction of sensory, perceptual, learning, and thinking processes.

577. **Human/Computer Interaction.**

The design of computer systems that are easy for people to use, including relevant principles and research in cognitive processes and artificial intelligence.

584. **(Psych.-Zool.) Neurophysiology.** (3) W alt. yr.

Prerequisite: Zool. 460 or equivalent.

Physiology of nerve cells and neuronal interactions.

585. **Advanced Psychobiology.** (3) F

Prerequisite: Psych. 385 or consent of instructor.

Critical study of brain-behavior relationships.

600R. **Seminar in Research Methods.** (3)

Prerequisite: Psych. 501.

Research strategies, methods, and design including measurement, scaling, questionnaire construction, reliability, validity, and experimental and statistical designs.

609. **Professional Issues in Clinical Psychology.** (3) F

Prerequisite: acceptance in clinical psychology.

Ethical issues from a historical and contemporary framework.

611. **Psychopathology.** (3) F

Prerequisite: Psych. 342 or equivalent.

Etiology and symptoms of dysfunctional behavior and their effects on the individual, family, and community. For majors only.

622. **Intelligence Testing.** (3) F

Prerequisite: acceptance in clinical or school psychology.

Methods of evaluation in children and adults.

623. **Adult Assessment.** (3) F

Prerequisite: acceptance in clinical or school psychology.

Objective and projective assessments.

624. **Child and Adolescent Assessment.** (3) W

Prerequisite: acceptance in clinical or school psychology.

Tests and techniques.

625. **Advanced Objective Assessment.** (3)

Prerequisite: acceptance in clinical or school psychology.

In-depth look at MMPI.

626. **Mental Retardation.** (3)

Prerequisite: Psych. 378 or equivalent and acceptance in clinical psychology.

Diagnosis, etiology, and prognosis.

631. **Professional Issues in Organizational Psychology.** (3)

Prerequisite: Psych. 531.

Consultant involvement in executive and management decision making, focusing on social responsibility and ethics.

632. **Adult Therapy.** (3) W

Prerequisite: acceptance in clinical or school psychology.

Theory and technique.

633. **Child and Adolescent Therapy.** (3) F

Prerequisite: acceptance in clinical or school psychology.

Techniques and systems used in treatment.

634. **Family Therapy.** (3) W

Prerequisite: acceptance in clinical or school psychology.

Intervention methods and techniques.

637. **Social Psychology of Groups.** (3)

Prerequisite: acceptance in clinical psychology.

Theories and research on small group processes for clinical students.

638. **Group Therapy.** (3)

Prerequisite: acceptance in clinical psychology.

Application of clinical techniques in small group processes.

640R. **Seminar in Personality.** (3)

Prerequisite: Psych. 540.

Intensive analysis of selected current topics in personality research and theory.

- 644. Rorschach Techniques.** (3)
Prerequisite: acceptance in clinical psychology.
Theory and skill training in administering, scoring, and interpreting Rorschach tests.
- 645. Cultural and Minority Issues.** (2)
Prerequisite: acceptance into clinical psychology program.
Issues in the context of current social and psychological knowledge and attitudes.
- 647. Developmental Psychopathology.** (3) Sp
Prerequisite: acceptance in clinical psychology.
Diagnosis and incidence of maladjustment, learning disabilities, abnormalities and subnormalities, and cultural deficits. Intervention and prevention strategies.
- 650R. Seminar in Social Psychology.** (3) F or W
Prerequisite: Psych. 551 and consent of instructor.
Variable topics including attitude change, social cognition, prosocial and antisocial behavior, group dynamics, and organizational psychology.
- 655. (Psych.-Soc. 630) Attitude Measurement and Change.** (3)
Prerequisite: consent of instructor.
Attitude development, change, and assessment, focusing on both individual and mass persuasion.
- 658. (Psych.-OrgB.) Practicum: Designing Training Programs.** (3)
Theory and methods of experience-based workshops and seminars, emphasizing management, leadership, and human relations training.
- 660R. Seminar in Experimental Psychology.** (3) On dem.
Prerequisite: consent of instructor.
A critical review of content areas taken from the contemporary literature in experimental psychology.
- 667R. Seminar in the Experimental Analysis of Behavior.** (3) On dem.
Prerequisite: consent of instructor.
Intensive overview of current trends and attendant philosophy. Principal attention will be given to research and philosophical journals.
- 675. Personality Dynamics.** (3) W
Prerequisite: acceptance in clinical psychology.
Theories and applications to clinical situations.
- 676R. Seminar in Psychology and Language.** (3)
Variable topics including psycholinguistics, sociolinguistics, language and dialect, and cultures in contact.
- 677R. Seminar in Cognitive Processes.** (3)
Prerequisite: Psych. 575.
Advanced topics in cognitive science and applied artificial intelligence.
- 678R. Seminar in Mathematical Psychology.** (3)
Variable topics including multivariate statistical methods, graphical data analytic techniques, and various mathematical models.
- 680. Clinical Neuropsychology.** (3) W alt. yr.
Prerequisite: acceptance in clinical psychology and Psych. 585.
Comprehensive study of the human dysfunctional brain.
- 685R. Seminar in Psychobiology.** (3)
Critical examination of topics of current interest taken from contemporary literature.
- 687R. Seminar in Psychopharmacology.** (3)
Prerequisite: Psych. 585 or equivalent.
Major classes of psychoactive drugs, emphasizing drug-behavioral interactions.
- 691R. Intervention Techniques in the Schools.** (3) F, W
Rationale and procedures for working with children with educational and behavioral problems in school settings.
- 692R. Special Topics in School Psychology.** (2) F, W
Prerequisite: acceptance in school psychology.
Computer use in school psychology.
- 695R. Independent Readings.** (1–3) F, W, Sp, Su
Faculty-supervised readings as arranged by student.
- 696R. Field Project.** (2–6) F, W, Sp, Su
Concluding research for school specialist program, culminating in final oral examination.
- 699R. Master's Thesis.** (1–9) F, W, Sp, Su
Concluding research for master's program, culminating in final oral examination.
- 710R. Readings in Clinical Psychology.** (1–3)
Prerequisite: acceptance in clinical psychology.
Guided individual study in various topics.
- 711R. Topics in Clinical Psychology.** (3)
Prerequisite: acceptance in clinical psychology.
Theory and practice in specific topics.
- 712R. Topics in Neuropsychology.** (3)
Prerequisite: Psych. 680 and acceptance in clinical psychology.
Current topics, including adult and child assessment. Other topics as determined by student interest.
- 741R. Integrative Practicum.** (1–3) F, W, Sp, Su
Prerequisite: acceptance in clinical psychology.
Supervised assessment and intervention, integrating psychopathology diagnosis and treatment.
- 742R. Projects in Clinical Psychology.** (3) F, W, Sp, Su
Prerequisite: acceptance in clinical psychology.
Advanced study or skill training in various areas.
- 743R. Clerkship.** (1–3) F, W, Sp, Su
Prerequisite: acceptance in clinical psychology.
Supervised experience in community agencies.
- 744R. Interpersonal Skills in Clinical Psychology.** (0) F, W
Prerequisite: acceptance in clinical psychology.
Practicum for first-year students.
- 745, 746, 747, 748. Clinical Internship.** (2) F, W, Sp, Su
Prerequisite: acceptance in clinical psychology.
Full-time training at approved mental health agency.
- 755R. Readings and Practicum in Social Psychology.** (Arr.)
Faculty-supervised readings and/or internship experience in field setting as arranged by student.
- 797R. Independent Research.** (1–4) F, W, Sp, Su
Prerequisite: consent of instructor.
Faculty-supervised research as arranged by student.
- 799R. Doctoral Dissertation.** (1–9) F, W, Sp, Su
Concluding research for doctoral program, culminating in final oral examination.

SCHOOL OF SOCIAL WORK

Director: W. Eugene Gibbons, 130 FOB, 378-3282
Fieldwork Educational Director and Graduate Coordinator:
E. Gene Shumway, 135 FOB, 378-3421

Faculty/Specialties

Professors

- Blake, Reed H. (1967) Ph.D., Utah State University, 1969.
Social Psychology, Technical Writing, Communication, Disaster Planning.
- Christiansen, John R. (1957) Ph.D., University of Wisconsin, Madison, 1955. Social Psychology, Research Methodology, Family, Disaster Planning.
- De Hoyos, Genevieve (1975) Ph.D., Indiana University, Bloomington, 1967. Theory, Human Behavior and Social Environment, Child Welfare.
- Gibbons, W. Eugene (1969) DSW, University of Utah, 1974. Psychiatric/Clinical Social Work, Family.
- Shumway, E. Gene (1975) DSW, Case Western Reserve University, 1969. Clinical Social Work (Individual and Marital Therapy).

Associate Professors

- Johnson, Barry L. (1965) Ph.D., University of North Carolina, 1977. Research Methodology, Statistics, Social Science Computing, Mental Health, Medical Sociology.
- Tanner, Elvin R. (1970) Ph.D., Brigham Young University, 1969. Clinical Social Work, Personal Counseling, Marriage and Family Systems, Cognitive Therapy.

Assistant Professors

- Edmonds, Rita M. (1982) Ph.D. Columbia University, 1981. Social Issues Research, Women and Adolescents, Welfare Dependency, Teen Pregnancy.
- Horton, Anne L. (1984) Ph.D., University of Wisconsin, Madison, 1983. Clinical Social Work, Marriage and Family, Domestic Violence.
- Pearson, Dale F. (1970) Ph.D., Brigham Young University, 1981. Clinical Social Work, Marriage and Family Therapy, Families and Children.
- Seipel, Michael M. O (1982) Ph.D., Cornell University, 1982. Social Welfare Policy, Community Organization, Ethnic Studies.
- Wheeler, Barbara R. (1979) DSW, University of Utah, 1978. Psychiatric/Clinical Social Work, Marriage and Family Therapy, Children, Women.

Graduate Program and Degree

Social Work (MSW)

Area of Specialization

Clinical social work with family and children.

The graduate program is designed to train students who are committed to the general objectives of the profession of social work, i.e., to promote the general welfare of society by enhancing the social functioning of individuals, families, groups, organizations, and communities. The basic objective is to educate professionals in knowledge, skills, attitudes, values, and motivation that undergird effectiveness at all levels of intervention, so that graduates can take their place in any field of practice in social work.

The program offers one method of concentration, i.e., preparation for clinical practice. The emphasis of the curriculum is on family and children. The curriculum design was developed

within the framework of systems theory as an integrating concept. The practice courses have been designed to interface the psychosocial approach to social work practice with the systems framework. Such an approach enables the practitioner to be responsive to the special issues of diversity in pluralistic societies such as race, ethnicity, sexism, and cultural differences.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Social Work (MSW)

Program accredited with the Council on Social Work Education.

Admission and Entry

- I. Application requirements:
 - A. Deadline: February 1.
 - B. Entrance examination: At departmental discretion.
- II. Prerequisites: Applicants are expected to have prepared themselves for the MSW program by completing course work and developing a base of knowledge and skill in the following areas:
 - A. Research (5 hours): Research*, statistics*
 - B. Human biology* (5 hours).
 - C. Behavioral sciences (9 hours): Abnormal behavior*, personality theory, learning theory, child development, family theory, etc.
 - D. Social sciences (6 hours): Social psychology, organizational behavior, social analysis (3); community planning, political science, social legislation, etc. (3).
 - E. Interpersonal skills (6 hours): Communication, case-work, group work, intervention skills/theory*. etc.

* Specifically required
- III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (64): Minimum of 64 course work hours distributed as follows.
Social work practice courses (19 hours), human behavior and social environment (8 hours), social welfare policy (6 hours), research (7 hours), professional seminar (2 hours), field practicum (14 hours), electives (8 hours).
- II. Electives: 8 hours, 6 of which are clinical. In addition to the required courses, MSW candidates must select at least one elective from SocW. 638 or 641. The remaining electives may be chosen from among other social work electives. One of the elective classes may be selected from a variety of clinical/family courses outside the school or from other educational opportunities to be negotiated with the faculty advisor.
- III. Research project.
- IV. Examination: Oral examination and defense of project.

Program and Degree Resources

Camilla Eyring Kimball Chair of Home and Family Life
Comprehensive Clinic
Family and Demographic Research Institute
Gerontology Resource Center
Women's Research Institute

SOCIAL WORK GRADUATE COURSES

567. Social Services for the Aging. (2) F, W
Prerequisite: consent of instructor.

Process and impact of social service delivery systems on the aged. Does not count as social work elective.

595R. Directed Readings. (1–3) F, W, Sp, Su
Prerequisite: consent of instructor.

600R. Qualitative/Quantitative Research Methodologies. (1) F, W

Overview of scientific method and procedures as they apply to individual graduate research. Emphasis on conducting ethical, qualitative, and quantitative research.

610. Integration and Application of Research Methods and Statistics to Social Work Practice. (3) Sp

Social and behavioral research methods relative to social work practice, including applications of social statistics. For majors only.

612. Human Behavior and Social Environment 3: Psychopathology. (3) W

Prerequisite: Psych. 342 or equivalent, SocW. 620.

Etiology and symptoms of dysfunctional behavior and their effects on the individual, family, and community. For majors only.

620. Human Behavior and Social Environment 1: Individual Development Life Cycle. (3) F

Forces influencing individual human development and behavior from birth to death, emphasizing psychological, social, cultural, biological, spiritual, and physical factors. For majors only.

621. Human Behavior and Social Environment 2: Organizations, Institutions, Communities. (2) W
Prerequisite: SocW. 620.

Theories associated with complex organizations, social organizations, institutions, and communities relative to macrolevel social work practice. For majors only.

630. Social Welfare Policy 1: A Framework for Analysis, Goal Setting, and Change. (3) F

Analyzing and changing social policies and programs. For majors only.

631. (SocW.-FamSc.) Social Welfare Policy 2: Family and Child Law. (3) W
Prerequisite: SocW. 630.

The law relative to formation, functioning, and dissolution of families and delivery of social services to them. For majors only.

632. International Perspectives on Social Welfare Policy. (2) W

Prerequisite: SocW. 630 or consent of instructor.

Analyzing social problems, policies, and programs across diverse social, cultural, and political forms, including goal setting and change strategies.

638. Practice in Child Services. (2) Alt. term
Prerequisite: consent of instructor.

Working with the social service delivery system on problems related to child neglect and abuse, foster care, adoptions, etc.

640. Families at Risk. (2) Alt. term
Prerequisite: consent of instructor.

Applying social work methods to multiproblem families and families under stress. Specific theory, techniques, and skills, i.e., crisis intervention, networking, etc.

641. Interventive Methods with Children and Adolescents. (2) F

Prerequisite: consent of instructor.

Use of interventive methods in treating child and adolescent problems in addition to understanding the reciprocal impact of significant systems, i.e., school, family, peers, church, health.

642. Marriage and Family Theories and Treatment. (2) W
Prerequisite: consent of instructor.

Various models of marriage and family treatment; appropriate intervention skills.

643. Advanced Marriage and Family Practice. (2) F
Prerequisite: SocW. 642.

Advanced methods of intervention with marital dyads, family and community.

644. Clinical Intervention with Special Populations. (2) W
Prerequisite: consent of instructor.

Applying core clinical practice skills to distinct groups representing racial, ethnic, and cultural diversity.

645. Theological Perspectives on Social Work Practice. (2) W
Prerequisite: consent of instructor.

Interface of religious and social work values, attitudes, and principles.

646. Women's Issues in Social Work Practice. (2) Alt. term
Prerequisite: consent of instructor.

Social work practice and specific problems and issues associated with the changing expectations and roles of women.

647R. Special Topics in Advanced Clinical Practice. (2) F, W, Alt. term
Prerequisite: consent of instructor.

Course content varies from year to year on basis of current need.

648R. Selected Fields of Practice. (2)

A survey of current problems and treatments in social work practice.

649. Evaluative Instruments in Social Work Practice. (2)

Using assessment instruments to guide treatment, evaluate therapeutic outcomes, and conduct practice research.

654R. Field Practicum. (1–3) F, W, Sp, Su
Prerequisite: first-year placement.

Practicum in social service agencies with an integrative seminar to examine relationship between theory and practice. For majors only.

655R. Field Practicum. (1–3) F, W
Prerequisite: second-year placement.

Practicum in social service agencies with an integrative seminar to examine relationship between theory and practice. For majors only.

660. Social Work Practice: Casework. (2) F
Prerequisite: SocW. 620 (may be taken concurrently).

Psychosocial assessment of individuals and implementing interventions. Skills laboratory required. For majors only.

661. **Social Work Practice: Advanced Casework.** (3) W
Prerequisite: SocW. 660.

Building on skills acquired in SocW. 660; using different microintervention models and approaches. For majors only.

662. **Social Work Practice: Group Work.** (2) F
Prerequisite: SocW. 620 (may be taken concurrently).

Structure, function, dynamics, and development of small groups, with special emphasis on group models and group theory. For majors only.

663. **Social Work Practice: Advanced Group Work.** (2) F
Prerequisite: SocW. 662.

Applying group theory to individual and family problems. Role of social workers in group process. Group leadership experience will be required. For majors only.

664. **Social Work Practice: Community Organization.** (2) W
Prerequisite: SocW. 621 (may be taken concurrently).

Basic practice theory, tactics, and strategies in working with neighborhoods, communities, and organizations toward planned change. For majors only.

665. **Social Work Practice: Introduction to Human Services Administration.** (2) W

Key managerial functions; administrative theory and selected management techniques. For majors only.

666. **Social Work Practice: Advanced Clinical Methods in Assessment/Intervention.** (2) F
Prerequisite: SocW. 661.

Linking psychosocial assessment with advanced clinical theory, skills, and techniques. For majors only.

693R. **Seminar in Professional Philosophy, Values, and Ethics of Social Work Practice.** (2) F, W, Sp, Su

Philosophical and ethical basis for social work and family therapy practice, including integrative framework for defining and implementing professional practice. For majors only.

698R. **Master's Research Project.** (1-3) F, W
Prerequisite: SocW. 610.

Applying research methods to evaluative, experimental, and survey studies in social work. Research report of publishable quality required. For majors only.

DEPARTMENT OF SOCIOLOGY

Chairman: James T. Duke, 894 SWKT, 378-3392

Graduate Coordinator: Philip Kunz, 876 SWKT, 378-3166

Faculty/Specialties

Professors

Albrecht, Stan L. (1974) Ph.D., Washington State University, 1970. Social Psychology, Research Methodology.

Bahr, Howard M. (1973) Ph.D., University of Texas, Austin, 1965. Urban Problems, Ethnic Relations.

Bahr, Stephen J. (1973) Ph.D., Washington State University, 1972. Family, Deviance, Law.

Chadwick, Bruce A. (1972) Ph.D., Washington University, 1967. Research Methods, Family, Social Change, Sociology of Work.

Condie, Spencer J. (1969) Ph.D., University of Pittsburgh, 1969. Theory, Medical Sociology.

Duke, James T. (1963) Ph.D., University of California, Los Angeles, 1963. Sociological Theory, Sociology of Religion.

England, J. Lynn (1970) Ph.D., University of Pittsburgh, 1971. Mathematics, Small Groups.

Jacobson, Cardell K. (1981) Ph.D., University of North Carolina, Chapel Hill, 1971. Social Psychology, American Race/Ethnic Relations.

Kunz, Phillip R. (1968) Ph.D., University of Michigan, Ann Arbor, 1967. Complex Organization, Population, Family.

Peterson, Evan T. (1953) Ph.D., University of Michigan, Ann Arbor, 1959. Social Gerontology, Research Methods, Family.

Rollins, Boyd C. (1963) Ph.D., Cornell University, 1961. Marital Quality, Power and Gender Roles, Socialization.

Seggins, John F. (1967) Ph.D., University of Kentucky, Lexington, 1968. Social Organization, Social Psychology, Ethnic Relations.

Thomas, Darwin L. (1972) Ph.D., University of Minnesota, St. Paul, 1968. Family, Social Psychology, Parent-Child Interaction.

Warner, W. Keith (1971) Ph.D., Cornell University, 1960. Complex Organization, Social Organization, Rural Sociology, Education.

Associate Professors

Heaton, Tim B. (1980) Ph.D., University of Wisconsin, Madison, 1979. Demography, Rural Sociology.

Stratification, Family

Johnson, Barry L. (1965) Ph.D., University of North Carolina, 1977. Statistics, Medical Sociology, Research Methods.

Johnson, Richard E. (1976) Ph.D., University of Washington, 1976. Deviance, Criminology, Juvenile Delinquency.

Spencer, Berkley A. (1969) Ph.D., Cornell University, 1967. Development, Latin American Studies, Planned Change.

Assistant Professors

Cornwall, Marie (1986) Ph.D., University of Minnesota, 1985. Religion, Family, Research.

Young, Lawrence A. (1985) Ph.D., University of Wisconsin, Madison, 1987. Complex Organization, Religion, Education

Graduate Programs and Degrees

Sociology (M.S.)

Family Studies (Ph.D.)

Sociology (Ph.D.)

Areas of Specialization

Demography, family sociology, social organization, social psychology.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Sociology (M.S.)

Students who are interested in pursuing the master's degree in sociology should direct inquiries to the Department of Sociology for advisement and a broader description of the program.

Admission and Entry

1. Application requirements:

A. Deadlines: University deadlines apply.

- B. Entrance examination: GRE encouraged but not required.
- II. Prerequisite: Baccalaureate degree in sociology or equivalent.

Requirements for Degree

- I. Credit hours (30): Minimum of 24 course work hours, including at least 15 hours of formal course work in sociology, plus 6 hours of thesis or project (Soc. 699R or 697R).
- II. Required courses: Soc. 600, 606, 610.
- III. Demonstration of competence in sociological theory, research methods, and statistics.
- IV. Thesis or research project: Students who plan to pursue a doctoral degree or other graduate work should complete a thesis. Students who pursue the research project option are using the master's degree as a terminal degree and cannot apply for further graduate work in sociology.
- V. Examination: Oral defense of thesis or project.

Sociology (Ph.D.)

Family Studies (Ph.D.)

Students who desire a Ph.D. in sociology may pursue either the regular sociology program or the family studies program. The latter is a joint Ph.D. program between the Sociology Department and the Family Sciences Department. Students who plan to specialize in family sociology should take the family studies option, and students who plan to choose other fields should take the regular sociology option. Please direct inquiries to the Department of Sociology for a broad description of the program.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: For family studies program, February 1; for sociology program, university deadlines apply.
 - B. Entrance examination: GRE encouraged but not required.
- II. Prerequisite: Master's degree in sociology or equivalent; master's thesis.
- III. Entry times: Fall semester for family studies.

Requirements for Degree

- I. Credit hours (66 plus skill): 48 hours of approved course work, plus 18 dissertation hours (Soc. 799R) and the skill requirement. Only course work with a grade of B- or better is acceptable.
- II. Required courses: Soc. 700, 706, 711; minimum of 9 hours in each of the two special areas selected for comprehensive examinations.
- III. Demonstration of competence at the doctoral level by required course work and by examination in sociological theory, research methods, and statistics.
- IV. Language/ Skill requirement:
 - A. Single language option: In-depth proficiency.
 - B. Two languages option: Reading ability.
 - C. One language and skill option: Reading ability in French, German, Spanish, or Russian; 8-10 hours of statistics, computer science, and mathematics, or of Soc. 400, 500, 504, 700, 706; FamSc. 602; Psych. 570.
 - D. Single skill option: Minimum 18 hours, approved by advisory committee, of statistics, computer science, and mathematics, or of courses listed in Option C.
- V. Dissertation.

VI. Examinations:

- A. Written comprehensive examination in two of the following areas of specialization: family sociology, social psychology, social organization, and demography.
- B. Oral defense of dissertation prospectus.
- C. Oral defense of dissertation.

Program and Degree Resources

Family and Demographic Research Institute
Women's Research Institute

SOCIOLOGY GRADUATE COURSES

500. Computer Use in Sociology. (3) On dem.

Prerequisite: Soc. 400 or equivalent.

Computer fundamentals and computer use for creating and analyzing sociological data.

504. Mathematical Sociology. (3) On dem.

Prerequisite: Math. 105.

Mathematical techniques of simulating and modeling social processes.

515. Seminar in Applied Sociology. (3) W, Sp, Su

Prerequisite: Soc. 315, 600, 606, 610.

Uses of sociological theory and methods to deal with individual, organizational, and societal problems. Techniques for communicating such knowledge to the nonsociologist.

521. Complex Organizations. (3) On dem.

Prerequisite: consent of instructor.

Theoretical approaches and empirical studies of organizations, their structures, processes, and problems; studies of industrial organizations, universities, hospitals, etc.

522. Social Stratification. (3) On dem.

Prerequisite: Soc. 111.

Status, class, and power systems in various societies.

524. Advanced Political Sociology. (3) Alt. sem.

Social basis of political behavior. Modern theories and research concerning use of power and decision making.

525. Sociology of Religion. (3) On dem.

Prerequisite: Soc. 111, 325, or consent of instructor.

Influences of social factors in the development of various religious systems.

545. Population Analysis. (3) On dem.

Prerequisite: Soc. 205 or equivalent.

Availability, use, and interpretation of population data for local, state, and national areas applied to planning and evaluation.

560. (Soc.-FamSc.) Contemporary Theories About the Family. (3) On dem.

Contemporary theories and research about the family, emphasizing role, exchange, and systems theories.

561. The Family Institution. (3) On dem.

The family in different societies; problems created by various family systems.

565. **Sociology of Aging.** (2) On dem.

Demographic and societal factors affecting aging. Agencies serving older citizens and role of the community in resolving problems of the aged.

590R. **Special Topics in Sociology.** (1–3) F, W, Sp, Su
Prerequisite: consent of instructor.

Course content varies from year to year.

595R. **Directed Readings.** (1–3) F, W, Sp, Su

Individualized reading program supervised by faculty member. P/F only.

600. (Soc.-FamSc.) **Advanced Research Methods.** (3) F, Sp
Prerequisite: Soc. 300 or consent of instructor.

Training in survey, experimental, secondary, and content analysis; qualitative, evaluation, and environmental impact research techniques.

601. (Soc.-FamSc.) **Seminar in Survey Research.** (3)
On dem.

Prerequisite: Soc. 300 or equivalent.

Survey research techniques of the behavioral sciences, emphasizing research and sampling designs.

602. (Soc.-FamSc.) **Experimental Design.** (3) On dem.
Prerequisite: Soc.-FamSc. 600, Stat. 501 or equivalent, or consent of instructor.

Research methods, logic, writing, and data analysis.

603R. (Soc.-FamSc.) **Research Practicum.** (3) On dem.
Prerequisite: consent of instructor.

Design, data collection, data analysis, and write-up.

606. **Intermediate Statistics.** (3) F, Sp

Prerequisite: concurrent or prior registration in Soc. 400 or 303, or consent of instructor.

Probability, estimation, hypothesis testing, correlation analysis, multiple regression, analysis of variance, and nonparametric methods for sociologists and other social scientists.

610. **Seminar in Contemporary Sociological Theory.** (3) W
Prerequisite: Soc. 311.

Contemporary theories: structural functionalism, conflict theory, exchange theory, and symbolic interactionism.

612. **Seminar in the Development of Sociological Theory.** (3) On dem.

Prerequisite: Soc. 610.

Contributions of sociological theorists, including Durkheim, Weber, Pareto, and Simmel.

620. **Theory and Research in Social Organization.** (3) On dem.

Prerequisite: admission to graduate sociology programs, others in graduate program by consent of instructor.

Graduate survey of the field of social organization and the core subfields therein.

623. **Seminar in Race and Ethnic Relations.** (3) On dem.

Major theories of race-ethnic relations; critical issues in the field.

630. (Soc.-Psych. 655) **Attitude Measurement and Change.** (3) On dem.

Prerequisite: consent of instructor.

Attitude development, change, and assessment, focusing on both individual and mass persuasion.

650. **Advanced Social Psychology.** (3) On dem.

Processes of social influence, emphasizing theory and research testing. Basic principles of social behavior.

660. (Soc.-FamSc.) **Parent-Child Interaction.** (3) W

Socialization of children in families, focusing on parent-child relationships from infancy through adolescence. Current theory and empirical research emphasized.

670. **Contemporary Urban Social Structure.** (3) On dem.

Prerequisite: Soc. 370.

Research-oriented examination of social forces in contemporary urban life that influence patterns of human interaction.

681R. **Seminar in Deviance, Crime, and Corrections.** (3)
On dem.

Prerequisite: Soc. 380, 381 or 383, or consent of instructor.

In-depth analysis of current issues in the field. Tailored to student interests.

692R. (Soc.-FamSc.) **Seminar in Family Relationships.** (3)
F, W, Sp or Su

Prerequisite: Soc.-FamSc. 560.

Theory and research in topical areas of family study (topics presented on alternate years): Marital stability, power and gender roles, marital quality and communication, family and religion, household and family demography.

697R. **Directed Research.** (1–3) On dem.

699R. **Master's Thesis.** (1–6) F, W, Sp, Su

700. **Sociological Measurement.** (3) W alt. yr.

Prerequisite: Soc.-FamSc. 600, Soc. 606.

Unidimensional and multidimensional measurement techniques, emphasizing theoretical, methodological, and substantive consequences of technique selection.

706. **Advanced Statistical Methods.** (3) On dem.

Prerequisite: Soc. 606.

Advanced multivariate analysis; analysis of variance and covariance, multiple regression, linear models, factor analysis, canonical correlations, and discriminant analysis.

711. **Sociological Theory and Theory Building.** (3) On dem.

Prerequisite: Soc.-FamSc. 600, Soc. 606, 610.

Latest contributions to theory; current endeavors in the construction of sociological theories.

720R. **Seminar: Social Organization.** (1–3) On dem.

Prerequisite: Soc. 111, 320.

750. **Seminar: Social Psychology.** (3) On dem.

Prerequisite: Soc.-Psych. 350 and consent of instructor.

792R. (Soc.-FamSc.) **Family Symposium.** () 5 F, W

Presentation and discussion of professional papers about the family.

799R. **Doctoral Dissertation.** (1–9) F, W, Sp, Su

COLLEGE OF FINE ARTS AND COMMUNICATIONS

Dean: James A. Mason, Professor, Music (A-410 HFAC)

Associate Dean, Graduate Studies: M. Dallas Burnett,
Professor, Communications (A-410 HFAC)

Associate Dean: Raymond E. Beckham, Professor, Communi-
cations (A-410 HFAC)

The following departments are in the College of Fine Arts and
Communications:

- Art
- Communications
- Design
- Music
- Theatre and Film

Graduate students in the College of Fine Arts and Communica-
tions have extraordinary opportunities for performance and labo-
ratory experiences. Besides supervising the publication of a daily
campus newspaper, the college houses television and radio sta-
tions and a large motion picture studio. Furthermore, the Harris
Fine Arts Center, home of the college, provides five speech and
drama theatres; two concert halls; two art galleries; journalism,
advertising, and broadcast laboratories; clinics; and practice
rooms. In addition, plans are underway for the construction of
an art museum to house the university's large art collection.

SPECIAL FACILITIES

Fine Arts Museum

Scheduled for completion in 1990, BYU's new Museum of Fine
Arts will itself be a striking example of art in its architecture.
Designed both to receive and reflect light, the building's four
levels will feature a variety of display and instructional areas.
Each area of the museum, from the permanent collection gal-
leries to the gallery of Oriental art, the intimate print and
drawing gallery, the sculpture court, the musical instrument
galleries, and the various gardens, theatres, and auditoriums,
will be enhanced by its setting and decor. Of special interest to
students will be the study center and research library associated
with the museum.

BYU's growing permanent collection contains more than
12,000 art pieces representing all major artistic styles in paint-
ing, sculpture, print work, and the decorative arts. Highly
prized are the collections of Oriental art featuring Ming and
Ch'ing Dynasty jade and art depicting the landscape and inhabi-
tants of the American West.

Art History Slide Library

A major resource for graduate student research and teaching, the
slide library houses a collection of 80,000 slide reproductions of

paintings, sculptures, architectural structures, and various
minor arts. Furthermore, a number of students work in the
library on assistantships or internships, some of them doing
special research with the collection. A computerized indexing
system is being developed that will enable a student to seek and
find materials under broad categories of iconographic content—
for example, art work dealing with animals, or death, or certain
kinds of landscapes.

Communications Research Center

The heart of the Communications Department research pro-
gram, the center provides logistical and technical assistance for
major research projects. The two-room complex includes com-
puter work stations and a room for data collection and analysis.
Here graduate students work with faculty members or receive
guidance on their own research in broadcasting, journalism,
advertising, public relations, and speech communication.

Radio and Television Studios

In these regular, on-air facilities, graduate students, particularly
those in communications, find numerous opportunities to hone
their professional skills and engage in experimental projects.

Motion Picture Studios

Graduate students in theatre and film work closely with profes-
sionals at the BYU Motion Picture Studios on commercial
projects as well as student films. This facility is one of the finest
motion picture studios on a university campus in the country.

Theatres

Three major theatres in the Harris Fine Arts Center serve as
laboratories for graduate students in acting, directing, and tech-
nical theatre.

Concert and Recital Halls

Graduate students have opportunities to perform individually
and with groups in both the Madsen Recital Hall and the de
Jong Concert Hall in the Harris Fine Arts Center.

Art Studio Space

Excellent studio space for painting, printmaking, and sculpture
are provided for graduate students in the Harris Fine Arts Center
and at two other locations.

DEPARTMENT OF ART

Chairman: Robert L. Marshall, B-509 HFAC, 378-4429
 Graduate Coordinators: Sherron D. Hill, C-502-C HFAC,
 378-6003 (Art Education); Steven Bule, D-501-B HFAC,
 378-2235 (Art History); W. Wayne Kimball, Jr., B-481-C
 HFAC, 378-3033 (MFA Programs)

Faculty/Specialties

Professors

Day, Michael D. (1983) Ed.D., Stanford University, 1973. Art
 Education.
 Kimball, W. Wayne, Jr. (1984) MFA, University of Arizona,
 1970. Printmaking.

Associate Professors

Barsch, Wulf E. (1974) MFA, Brigham Young University,
 1972. Painting, Printmaking.
 Hamilton, Charles Mark (1974) Ph.D., Ohio State University,
 Columbus, 1978. Architectural History
 Hill, Sherron D. (1981) Ph.D., University of Iowa, 1973. Art
 Education; Curriculum Development and Evaluation
 Marshall, Robert L. (1969) M.A., Brigham Young University,
 1968. Painting.

Assistant Professor

Bule, Steven (1984) Ph. D., Ohio State University, 1987. Art
 History—Italian Renaissance.

Graduate Programs and Degrees

Art Education (M.A.)

Art History (M.A.)

Art Studio (MFA)
 Ceramics (MFA)
 Drawing (MFA)
 Painting (MFA)
 Printmaking (MFA)
 Sculpture (MFA)

General University Requirements

See General Information section of this catalogue for university
 requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Art Education (M.A.)

The M.A. program in art education offers two options. Option
 A requires a research-oriented thesis, and Option B requires
 development of a practical curriculum project.

Option A is intended for individuals who plan to pursue a
 Ph.D. or an Ed.D. in art education. The required course work
 and thesis preparation will help develop research and writing
 skills that are necessary for students to compete in a doctoral
 program.

Option B is intended for individuals who teach art and desire
 professional and personal development that will improve their
 abilities to teach and make art. The required course work and
 curriculum project will help students develop understanding
 and skills for professional leadership in art education.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: March 1 for fall semester entrance;
September 1 for winter semester entrance.
 - B. Slide portfolio of applicant's recent work.

C. One or two written papers demonstrating
 applicant's writing skills.

D. GPA: Minimum of 3.0 for last 60 hours.

II. Prerequisites:

- A. Baccalaureate degree in art education from an
 accredited institution. Applicants holding other
 teaching degrees may be considered if art
 deficiencies are completed to the satisfaction of the
 art education admissions committee.
- B. Certification to teach in public schools at the
 elementary or secondary level.
- C. Minimum two years of teaching experience.

III. Entry times: Fall and winter semesters.

Requirements for Degree

- I. Credit hours (36): Minimum 30 course work hours
 from 500 and 600-level courses, plus 6 thesis or project
 hours (Art 699R or 698R).
- II. Selection of graduate advisory committee during first
 semester.
- III. Course requirements:
 - A. 12 hours of art education classes.
 - B. 12 hours divided among art studio, art history, art
 criticism courses.
 - C. 6 elective hours (may include approved courses
 taken outside the department).
- IV. Acceptance by department of thesis or curriculum
 project proposal.
- V. Thesis or curriculum project
- VI. Examinations:
 - A. Written comprehensive examination during final
 semester of residency
 - B. Oral defense of thesis or project.

Art History (M.A.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: March 1 for fall semester entrance;
September 1 for winter semester entrance.
 - B. GPA. Minimum of 3.0 for last 60 hours.
- II. Prerequisite: Baccalaureate degree in art history or
 related field.

Requirements for Degree

- I. Credit hours:
 - A. Thesis option (30): Minimum 24 course work hours
 plus 6 thesis hours (Art 699R).
 - B. Project option (33): Minimum 30 course work
 hours plus 3 project hours.
- II. Appointment of graduate advisory committee during
 first semester.
- III. Required courses: The M.A. program is designed to
 allow maximum exposure to the various areas of art
 history. Courses should be selected in consultation
 with the graduate coordinator and advisory committee
 chairman.
- IV. Language requirement: Reading knowledge of at least
 one foreign language, preferably French or German;
 similar competence recommended in a second
 language.
- V. Thesis or project.
- VI. Examinations:
 - A. Final written comprehensive examination.
 - B. Oral defense of thesis or project.

Specific information on course and program requirements is available from the Department of Art.

Minor in Art History

The M.A. program may provide minor areas of study for graduate students in approved programs.

Art Studio (MFA)

- Ceramics (MFA)
- Drawing (MFA)
- Painting (MFA)
- Printmaking (MFA)
- Sculpture (MFA)

Admission and Entry

- I. Number of resident MFA candidates is restricted by availability of individual studio space.
- II. Application requirements:
 - A. Deadlines: March 1 for fall semester entrance; September 1 for winter semester entrance.
 - B. GPA: Minimum 3.0 for last 60 hours.
 - C. Slide portfolio of applicant's work.
- III. Prerequisite: Baccalaureate degree in art or equivalent with a minimum of 20 hours of upper-division course work and 12 hours of art history.
- IV. Applicants with M.A. degree in art from another institution may request department approval to transfer graduate credit.
- V. Entry times: Fall and winter semesters.

Requirements for Degree

- I. Credit hours (60): Minimum 60 hours of approved course work, including 6 hours of project (Art 697R).
- II. Course requirements:
 - A. 30 hours in area of emphasis (ceramics, drawing, painting, printmaking, sculpture).
 - B. 9 hours in supportive area (may exceed departmental boundaries if approved by committee); 3 must be in studio.
 - C. 12 hours of art history, criticism, and readings to include 3 hours of Art 598R, and 3 hours of Art 610 or 612.
 - D. 3 hours of seminar (enrollment required during residency semesters).
- III. Selection of graduate advisory committee during first semester.
- IV. Residency: Two consecutive semesters; final project must be completed during this residency.
- V. Slide presentation of recent work (to studio faculty) at conclusion of each semester. A faculty rating of satisfactory, marginal, or unsatisfactory is used to determine progress and continuation in the program. Three semester ratings lower than satisfactory, two unsatisfactory ratings, or a marginal rating followed by an unsatisfactory rating will result in dismissal from the program.
- VI. Preliminary solo exhibition of work completed to date. To be presented after completion of 20–30 hours. This show will be used by the graduate faculty to evaluate progress and recommend approval for continuation in the program.
- VII. Proposal for terminal project. To be submitted during the semester immediately following satisfactory review of the preliminary solo exhibition. This proposal must receive advisory committee approval.

- VIII. Terminal project and formal project written report. The terminal project must be produced and exhibited, and then approved by the graduate faculty during the required two semesters in residency. An exhibit of the final projects of all MFA degree candidates is required. The project will be evaluated formally by the graduate faculty and must be accepted and approved before students can be cleared for graduation. Exceptions may be granted only on written appeal to the graduate coordinator.
- IX. Examination: Oral defense of project.

ART EDUCATION GRADUATE COURSES

- 578R. **Art Education Studio.** (3) F, W, Sp, Su
Includes M.A. courses in ceramics, drawing, oil painting, aqueous painting, printmaking, crafts, sculpture.
- 677R. **Research in Art Education.** (3)
Prerequisite: admission to graduate program.
Research methods applied to art education inquiry.
- 678R. **Issues and Trends in Art Education.** (3) W
Prerequisite: admission to graduate program.
Historical review emphasizing recent issues in art education.
- 679R. **Special Problems in Art Education.** (3) F, W, Sp, Su
Prerequisite: admission to graduate program.
Specific problems investigated, discussed, and evaluated, depending on student needs.
- Elementary Art Education
 - Secondary Art Education
 - Teaching Art on the College Level
 - Curriculum Development in Art
 - Aesthetic Education
 - Art and the Exceptional Student
 - Administration of Art Programs
 - Art Criticism

698R. **M.A. Curriculum Project.** (3) F, W, Sp, Su

699R. **Master's Thesis.** (1–6) F, W, Sp, Su

ART HISTORY GRADUATE COURSES

510. **Western Architecture.** (3) F
Critical evaluation of major movements in Western architecture.
520. **Museology 1.** (5) F
Theoretical and administrative aspects of museum work.
521. **Museology 2.** (5) W
Prerequisite: Art 520.
Functional aspects of museum work.
530. **Teaching Art History in the Public Schools.** (3) F
Conceptual methodology of teaching art history in the public schools.
- 600R. **Individual Study in Art History.** (1–8) F, W, Sp, Su
Prerequisite: Art 211, 212, 298.
In-depth study into any chosen art historical area.
601. **Art of Egypt and Mesopotamia.** (3) F alt. yr.
602. **Greek Art.** (3) F
603. **Roman Art.** (3) W
604. **Byzantine Art.** (3) F alt. yr.

- 605. Medieval Art. (3) W
- 606. Italian Renaissance. (3) F
- 607. Northern Renaissance Art. (3) W alt. yr.
- 609. Nineteenth-Century European Art. (3) F
- 610. Modern Art. (3) F
- 611. Modern Architecture. (3) W
- 612. Contemporary Art. (3) W
- 613. Northern Baroque Art. (3) W alt. yr.
- 614. Southern Baroque Art. (3) W
- 615. American Architecture and City Planning. (3) F alt. yr.
- 617. American Painting and Sculpture to 1913. (3) F alt. yr.
- 670. Pre-Columbian Art. (3) W
- 671. Native American Art. (3) W
- 675. Primitive Art. (3) W
- 695R. Art History Seminar. (3) F, W
- 699R. Master's Thesis. (1-6) F, W, Sp, Su

ART STUDIO GRADUATE COURSES

- 540. Business Practices for Artists. (2) W
- 595R. Seminar. (3) F, W
Student and faculty analysis of curriculum relationships, projection of student objectives, contemporary topics, and visits to current exhibits.
- 598R. Readings. (1-3) F, W,
Graduate readings in the visual arts.
- 621R. Graduate Drawing Studio. (1-8) F, W, Sp, Su
Prerequisite: admission to graduate program.
- 622R. Graduate Figure Drawing Studio. (1-8) F, W, Sp, Su
Prerequisite: Art 621R.
- 627R. Graduate Painting Studio. (1-8) F, W, Sp, Su
- 650R. Graduate Printmaking Studio. (1-8) F, W, Sp, Su
- 656R. Graduate Sculpture Studio. (1-8) F, W, Sp, Su
- 659R. Graduate Ceramics Studio. (1-8) F, W, Sp, Su
- 697R. MFA Project. (1-8) F, W, Sp, Su

DEPARTMENT OF COMMUNICATIONS

Chairman: Gordon C. Whiting, E-509 HFAC, 378-2077
Graduate Coordinator: Richard I. Kagel, F-570 HFAC, 378-2125

Faculty/Specialties

Professors

- Barney, Ralph D. (1971) Ph.D., University of Missouri, Columbia, 1971. Media Ethics, International Communication, Media and Society.
- Beckham, Raymond E. (1949) Ph.D., Southern Illinois University, 1972. Public Relations.
- Burnett, M. Dallas (1958) Ph.D., Northwestern University, 1967. Communications Law.
- Gibb, J. Douglas (1969) Ph.D., Wayne State University, 1966. Human Communication Processes.
- Tarbox, Norman C. (1960) Ph.D., University of Utah, 1979. Broadcasting History.
- Whiting, Gordon C. (1973) Ph.D., Michigan State University, 1967. Assessment of Media Quality.

Associate Professors

- Hainsworth, Brad E. (1984) Ph.D., University of Utah, 1968. Issues Management.
- Gale, Larrie Eldon (1978) Ph.D., University of Utah, 1973. Message Design, International Communication.
- Goodman, R. Irwin (1962) Ed.D., Indiana University East, 1969. Media Evaluation.
- Kagel, Richard I. (1973) Ph.D., Columbia Pacific University, 1980. Advertising Research.
- Pratte, Paul Alfred (1984) Ph.D., University of Hawaii, 1976. Journalism History.

Assistant Professors

- Nelson, Jack Adolph (1977) Ph.D., University of Missouri, Columbia, 1971. Magazines, Journalism History
- Porter, William C. (1972) Ed.D., University of Oklahoma, 1986. New Technologies, Writing Theory.

Graduate Program and Degree

Communications (M.A.)

Area of Specialization

Mass communication theory and research.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Communications (M.A.)

Admission and Entry

- I. Application requirements:
 - A. Deadline: June 1.
 - B. Entrance examination: Miller Analogies Test.
 - C. GPA: Minimum 3.0 GPA for last 60 semester hours.
- II. Prerequisites:
 - A. Baccalaureate degree.
 - B. If undergraduate preparation in communications is not adequate, the advisory committee and department graduate coordinator or chairman will require certain courses to satisfy the deficiency.
 - C. Background in research and statistics; prerequisite course required.
 - D. Professional experience in communications is desirable.
 - E. Professional competence in written and spoken English is necessary.
- III. Entry time: Fall semester.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Comms. 699R).
- II. Required courses: Comms. 609, 610, 611, 612R, 613, 616 (14 hours), 699R.
- III. Electives: Determined in consultation with sponsor/advisor.
- IV. Thesis.
- V. Examinations:
 - A. Written comprehensive examination.
 - B. Final oral examination and defense of thesis.

Communications Minor

Consult the department chairman or graduate coordinator regarding a recommended program of study.

COMMUNICATIONS GRADUATE COURSES

501. History of Mass Communications. (2) F, alt. term

Print, film, and broadcast communication media from their beginnings to the present; their roles as institutions in American society.

502. Electronic Media Criticism. (2) W

Criticism of electronic media as systems and of their products and effects; critic's role and qualifications.

510. Mass Media Administration. (2) F, W, alt. term

Prerequisite: Comms. 312, 439, 449.

Basic principles of management as they relate to organizing and administering newspapers, magazines, radio stations, and television stations.

515. Broadcast Documentary Production. (3) F, W, Su

Prerequisite: Comms. 316, 360, 414, or equivalent experience. Depth reporting and presenting news and public affairs information in miniseries, magazine formats, and documentary specials for radio and television.

521. Opinion Writing. (2) F, W, alt. term

Prerequisite: Comms. 312 or 316.

Opinion function of the mass media in editorials, columns, commentaries, and reviews.

528. Magazine Editing and Publishing. (2) W

Prerequisite: Comms. 312.

Layout and design for magazines and business publications. Contemporary practices in content and production.

538. Electronic Publishing. (3) W

Impact of computerized information delivery on traditional mass media and on society. Existing electronic systems.

550. Communicating Values Through Media. (2) W

Variables influencing development of values through mediated messages.

555. Media Program Research. (2)

Prerequisite: Comms. 291.

Research techniques used to evaluate films, TV, or audio programs before and after production.

556R. Advanced Program Development and Production. (2–4) F, W, alt. term

Prerequisite: consent of instructor.

Broadcasting and film production; observing professional standards.

580. Comparative World Communication Systems. (2) F

Information systems in developing, authoritarian, and free nations and their relationship to government. Senior students may enroll only with faculty approval.

581. International Communication Problems. (2) W

Cultural, physical, and governmental barriers to information flow between nations; role of information flow in foreign policy; international propaganda. Senior students may enroll only with faculty approval.

590R. Selected Readings and Projects. (1–2)

Independent research and study outside usual thesis work.

609. Proseminar. (1) F

Introduction to graduate study and mass communication theory.

610. Studies in Communication Theory. (3) F

Nature and content of contemporary communication theory.

611. Research Methods in Communication. (3) W

Prerequisite: Star. 222 or equivalent.

Major methods of research used in communication; thesis writing and research.

612R. Research Practicum. (1) F, W

Practical experience in research under direction of individual faculty.

613. Literature of Communications. (2) W, Alt. term

Literature that contributes to understanding and functioning of communications processes.

615. Public Opinion and Propaganda. (3)

Concepts of public opinion and propaganda, their links to interpersonal and societal processes; mass media.

616. Seminar in Mass Media and Society. (3) F

Mass media's roles in major social settings, historical development of open-system societies, contemporary ethical dilemmas, effects of new media.

617. Mass Communications and Government. (3)

Contemporary relationship between government and the mass media; philosophical and historical basis for regulation in light of constitutional guarantees.

690. Seminar in Communications. (1)

691R. Special Studies in Communications. (1–3)

Individual work on approved problems not leading to a thesis. Projects must be approved before registration.

695R. Topical Seminar. (1)

699R. Master's Thesis. (6V)

DEPARTMENT OF DESIGN

Chairman: John W. Sipherd, 210 BRMB, 378-2064

The Department of Design does not offer a graduate degree but offers the following graduate courses:

DESIGN GRADUATE COURSES

610R. Advanced Problems in Design. (1-8) F, W, Sp, Su
Prerequisite: admission by portfolio.

Individual research and project development.

630R. Advanced Design Problems in Industrial Design.
(1-8) F, W, Sp, Su

Prerequisite: admission by portfolio.

Individual research and project development.

631R. Advanced Presentation Methods for Industrial Design. (1-8) F, W, Sp, Su

Prerequisite: admission by portfolio.

Individual research and project development.

640R. Advanced Problems in Graphic Design. (1-5) F, W, Sp, Su

Prerequisite: admission by portfolio.

Individual research and project development.

644R. Advanced Problems in Illustration. (1-5) F, W, Sp, Su

Prerequisite: admission by portfolio.

Individual research and project development.

DEPARTMENT OF MUSIC

Chairman: K. Newell Dayley, C-550 HFAC, 378-3083

Graduate Coordinator: S. Gordon Jessop, E-544 HFAC,
378-6113

Faculty/Specialties

Professors

Dalton, David J. (1963) D.M., Indiana University, Bloomington, 1970. Instrumental Performance/Pedagogy.

Mathiesen, Thomas J. (1972) DMA, University of Southern California, 1971. Musicology.

Pollei, Paul C. (1963) Ph.D., Florida State University, 1975. Keyboard Performance/Pedagogy.

Powley, E. Harrison (1969) Ph.D., University of Rochester, 1974. Musicology.

Pratt, Rosalie Rebollo (1979) Ed.D., Columbia University, 1976. Music Education.

Williams, Glenn R. (1965) DMA, University of Rochester, 1961. Instrumental Performance/Pedagogy.

Associate Professors

Sargent, David H. (1976) DMA, University of Illinois, Urbana, 1975. Composition.

Staheli, Ronald J. (1978) DMA, University of Southern California, 1977. Choral Conducting.

Stuart, Lila R. (1986) M.M., Indiana University, 1968. Vocal Performance/Pedagogy.

Assistant Professors

Hicks, Michael D. (1986) DMA, University of Illinois, 1984. Composition.

Jessop, Scott Gordon (1980) Ph.D., Brigham Young University, 1980. Music Education.

Graduate Programs and Degrees

Music Education (M.A.)

Musicology (M.A.)

Composition (M.M.)

Music Education (M.M.)

Pedagogy (M.M.)

Performance (M.M.)

Composition (DMA)

Musicology (Ph.D.)

Areas of Specialization

See faculty specialties.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Please consult the current edition of the Department of Music Graduate Handbook for specific materials relating to application to a program.

Admission and Entry

- I. Application requirements for all graduate music majors:
 - A. Deadlines: March 1 for fall semester entrance and consideration for assistantships and financial awards for the following academic year.
 - B. Entrance examination: GRE music subject test; score must be received before admission.
 - C. Sample research paper: International students whose principal language is not English must submit to the department a sample research paper that demonstrates adequate ability to write in English. This paper should be submitted to the Department of Music at the time completed application forms are submitted to Graduate Admissions.
 - D. Graduate performance audition: For majors or minors in performance and pedagogy.
 - E. Entry times: Summer term and fall semester only. Applicants for M.M. in music education may enter summer term only.

Music Education (M.A.)

Musicology (M.A.)

Admission and Entry

- I. Application requirements: See general requirements above, but consult Department of Music Graduate Handbook for specific application requirements.
- II. Prerequisite: Baccalaureate degree in music or equivalent in respective majors.

Requirements for Degree

- I. Required credit hours:
 - A. Music education (32): Minimum 26 course work hours plus 6 thesis hours (Music 699R).
 - B. Musicology (30): Minimum 24 course work hours plus 6 thesis hours (Music 699R).

- II. Required courses:
 - A. Music education: Music 607, 608, 609, 635, 699R; 6 hours from 636, 637, 638, 639, 640, 641; Stat. 552, 554 or Psych. 560, 565.
 - B. Musicology: Music 635, 699R; any 12 (Option 1) or 15 (Option 2) hours from 636, 637, 638, 639, 640, 641.
- III. Minor: Consult with department.
- IV. Thesis.
- V. Examinations:
 - A. Oral defense of thesis.
 - B. Department language proficiency examination in French, German, or Latin for musicology candidates.

Composition (M.M.)

Admission and Entry

- I. Application requirements: See general requirements above, but consult Department of Music Graduate Handbook for specific application requirements.
- II. Prerequisites:
 - A. Baccalaureate degree in music composition or equivalent in previous training.
 - B. Portfolio of four works in various media and forms and a tape of two or more of these compositions.

Requirements for Degree

- I. Credit hours (32): Minimum 32 course work hours.
- II. Required courses: Music 588, 635, 641, 687R (6), 698R (6); 3 hours from 636, 637, 638, 639, 640; 6 hours from 507R, 571, 581, 586, 591.
- III. Recital: Strongly recommended.
- IV. Project.
- V. Examination: Final oral examination and defense of project.

Music Education (M.M.)

Admission and Entry

- I. Application requirements: See general requirements above, but consult Department of Music Graduate Handbook for specific application requirements.
- II. Prerequisite: Music teacher certification.

Requirements for Degree

- I. Credit hours (32): Minimum 32 course work hours including a professional improvement project (Music 698A,B).
- II. Required courses: Music 607, 608, 609, 610, 611R, 612R, 613R, 614R (6 hours); 635, 659R (4 hours), 698A,B.
- III. Project.
- IV. Examination: Final oral examination and defense of project.

Pedagogy (M.M.)

Admission and Entry

- I. Application requirements: See general requirements above, but consult Department of Music Graduate Handbook for specific application requirements.
- II. Prerequisites:
 - A. Baccalaureate degree in performance or pedagogy or equivalent.
 - B. Entrance performance audition.

Requirements for Degree

- I. Credit hours (32): Minimum 32 course work hours.
- II. Required courses:
 - A. Music 665R (4 hours), one semester teaching on a one-to-one basis and one semester teaching in a group situation (teaching college students, adults or children).
 - B. Music 635, 660R (4 hours), 666R (4 hours); 6 hours from 636, 637, 638, 639, 640, 641; keyboard emphasis: 507R, other emphases: 2 hours of ensemble, one of which must be large ensemble.
 - C. Music 697A: Preparation of formal paper.
 - D. Music 697B: Recital: one-half solo literature and one-half lecture-demonstration related to pedagogical material.

Performance (M.M.)

Admission and Entry

- I. Application requirements: See general requirements above, but consult Department of Music Graduate Handbook for specific application requirements.
- II. Prerequisites:
 - A. Baccalaureate degree in performance or pedagogy or equivalent.
 - B. Music 207 or equivalent for conducting candidates.
 - C. Proficiency in German, French, and Italian diction for voice specialty candidates.
 - D. Entrance performance audition.

Requirements for Degree

- I. Credit hours (32): Minimum 32 course work hours.
- II. Required courses:
 - A. Music 635, 660R (8 hours in specialty).
 - B. 9 hours in nonperformance graduate music courses (as approved by advisory committee) from one or more of the following areas: music education, musicology, and theory.
 - C. Voice, keyboard, orchestral instrument specialties: Music 665R (2 hours), 666R (2–4 hours).
 - D. Conducting specialty: Music 611R, 612R, 613R, 614R (4 hours).
- III. Additional required courses for specialties:
 - A. Voice: Choral ensemble or musical theatre (2 hours).
 - B. Keyboard: Chamber music (2 hours).
 - C. Orchestral instrument: Large and small ensemble each semester of residence.
 - D. Conducting: Large ensemble (2 hours).
- IV. Jury examination each semester.
- V. Full recital. Performance majors may select Music 663R or the 697A,B sequence. With the approval of their performance specialty instructor, those who choose the solo recital (663R) option may select the recital program from the repertoire studied after becoming degree-seeking graduate students at Brigham Young University. Each student is responsible for organizing and rehearsing any ensemble used in the recital.

Composition (DMA)

Admission and Entry

- I. Application requirements: See general requirements above, but consult Department of Music Graduate Handbook for specific application requirements.
- II. Prerequisite: Master's degree in composition or equivalent.

Requirements for Degree

- I. Credit hours (54): Minimum 54 course work hours beyond the master's degree.
- II. Required courses (beyond master's degree) divided into three areas:
 - A. Composition: Music 787R (18 hours), 798R (12 hours).
 - B. Theory: 15 hours from Music 571, 581, 586 (if not already taken on the master's level), 591, 671, 672, 673, 681, 682, 683, 691, 694R. Other courses may be substituted if approved by graduate composition faculty.
 - C. Music history: 9 hours from Music 636, 637, 638, 639, 640, 641 (if not already taken on master's level), 694R, 785, 786.
- III. Recitals: Recital of student's chamber music compositions by end of second semester of enrollment and performance of large-scale work for orchestra, wind ensemble, or chorus and orchestra by end of third semester of enrollment.
- IV. Language/enrichment requirement:
 - A. Pass departmental examination in either French or German.
 - B. 15 hours from CS 142, 143, 232; EET 236; Music 281, 282, 381R.
 - C. 4 hours each in a minimum of four allied arts (viz., painting, drawing, sculpture, ceramics, acting, film production, dance, creative writing).
 - D. 15–20 hours, determined in consultation with advisory committee, in support of candidate's emphasis.

Musicology (Ph.D.)

Admission and Entry

- I. Application requirements: See general requirements above, but consult Department of Music Graduate Handbook for specific application requirements.
- II. Prerequisites: Baccalaureate degree in music; master's degree in musicology or equivalent.

Requirements for Degree

- I. Credit hours (86 beyond baccalaureate, 56–58 beyond master's): Minimum of 68 course work hours beyond the bachelor's degree or 38–40 hours beyond the master's degree (subject to approval by the advisory committee), plus 18 dissertation hours (Music 799R).
- II. Required courses: Music 591, 635, 636, 637, 638, 639, 640, 641, 652, 653, 785, 786, 699R (thesis, 6 hours), 799R (dissertation, 18 hours).
- III. 8 hours from a single cognate field outside the Department of Music (e.g., linguistics, philosophy, German literature, etc.).
- IV. Language requirement: Pass departmental examinations in French, German, and Latin (additional languages may be required by advisory committee if necessary for candidate's research).
- V. Dissertation.
- VI. Examinations:
 - A. Comprehensive examination.
 - B. Oral defense of dissertation.

MUSIC GRADUATE COURSES

500. Aesthetics. (3) F alt. yr.

Fundamental questions of aesthetic theory as they have been treated from classical antiquity to the present, emphasizing musical aesthetics.

507R. Advanced Topics in Keyboard Harmony. (5) On dem.

Prerequisite: Music 407.

Topics vary.

536. Fundamentals and Techniques of the Marching Band. (2) On dem.

Prerequisite: Music 294, 296; for music education majors only. Planning, charting, and scoring for marching bands.

537. Music for Elementary School Teachers. (2) On dem.

Prerequisite: Music 380, 421, or elementary music teaching experience.

Experiences in teaching various music activities in the elementary school.

550R. Chamber Music: Brass, Jazz, Percussion, Piano, Strings, Synthesizer, Vocal, and Woodwinds. (0.5) F, W, Su

571. Sixteenth-Century Counterpoint. (3) F, Su alt. yr.

Prerequisite: Music 471.

Strict modal counterpoint in sixteenth-century style (Palestrina); includes species, text setting, and motet.

581. Twentieth-Century Orchestration. (3) W, Su alt. yr.

Prerequisite: Music 481 or 482.

New techniques for standard and new instruments; graphic scores; analysis and listening.

582. Electronic Orchestration. (3) On dem.

Prerequisite: Music 481.

Digital and analog synthesis, orchestration techniques for synthesizer and computer-generated sounds.

586. Pedagogy of Music Theory. (3) On dem.

Prerequisite: Music 294, 296.

Philosophy, methods, and materials for teaching music theory instruction.

588. Seminar in the Compositional Process. (3) On dem.

An investigation of the creative process and its implications for composers, performers, and listeners through projects in problem solving and applications and interactions of principles.

591. Schenker Analysis. (3) On dem.

Prerequisite: Music 491.

Heinrich Schenker's tonal analysis system: concepts and skills.

599R. Cooperative Education. (1–6)

Prerequisite: consent of instructor.

Internship or externship in creative, performing, producing, or teaching applications of major course work.

601. Elementary Music Pedagogy. (2) Su, On dem.

Prerequisite: Music 380 and the equivalent of an elementary education teaching minor in music.

Orff, Dalcroze, and Kodaly materials and techniques.

607. Historical and Social Foundations of Music Education. (2)

Significant leaders, events, and trends in history of music education, emphasizing sociological implications. Research paper required.

608. Philosophical and Aesthetic Foundations of Music Education. (2)

Significant philosophical and aesthetic questions related to teaching music in the public schools. Research paper required.

609. Theories of Music Learning and Motivation. (2)

Applications of psychology to the teaching and learning of music. Research paper required.

610. Score Analysis. (2) F, Su

Analytical techniques; analysis of representative choral and instrumental works from the Renaissance through contemporary styles.

611R. Score Preparation and Conducting: Band. (2) Su, F

612R. Score Preparation and Conducting: Choral. (2) Su, F

613R. Score Preparation and Direction: Jazz. (2) alt. Su, alt. W

614R. Score Preparation and Conducting: Orchestra. (2) alt. Su, alt. W

625R. Summer Music Workshops and Clinics. (1–2) Su

630R. Special Lectures in Music Education. (1–5) Su
Prerequisite: certification in music plus teaching experience.

635. Musical Research Techniques. (3) F, Su

Prerequisite: graduate standing.

Required of all candidates for graduate music degrees. Should be taken in first semester of graduate work.

636. Music in the Middle Ages. (3)

Prerequisite: Music 484, 485, or equivalent.

637. Music in the Renaissance. (3)

Prerequisite: Music 484, 485, or equivalent.

638. Music in the Baroque Era. (3)

Prerequisite: Music 484, 485, or equivalent.

639. Music in the Classic Period. (3)

Prerequisite: Music 484, 485, or equivalent.

640. Music in the Romantic Period. (3)

Prerequisite: Music 484, 485, or equivalent.

641. Music of the Contemporary Period. (3)

Prerequisite: Music 484, 485, or equivalent.

642R. Lectures in Musicology. (1–3)

Prerequisite: Music 484, 485, or equivalent.

652. History of Notation and Paleography 1. (3)

Prerequisite: Music 484, 485, 636, or equivalent.

Notation from the early Christian chant to approximately 1400.

653. History of Notation and Paleography 2. (3)

Prerequisite: Music 652.

Offered same year as Music 652. Notation from approximately 1400 to 1625, including tablatures.

659R. Performance Instruction. (2) F, W, Su

Prerequisite: music major status; completion of undergraduate performance instruction.

Graduate performance instruction for those not majoring in performance or pedagogy. \$140 fee.

660R. Performance Instruction. (2) F, W, Su

Prerequisite: completion of undergraduate performance proficiency requirements and audition; music major. \$140 fee.

663R. Solo Recital. (2) F, W, Su

Prerequisite: concurrent registration in Music 660R. Recital fee in addition to private lessons.

665R. Pedagogy 3. (2) On dem.

Prerequisite: completion of Music 465R or equivalent.

Advanced pedagogical studies and supervised private and group instruction.

666R. Music Literature 3. (2) On dem.

Prerequisite: completion of Music 466R or equivalent.

Continuation of Music 466R.

671. Twentieth-Century Counterpoint. (3) On dem.

Prerequisite: Music 571.

Linear counterpoint in dissonant contexts, using such works as Hindemith's *Ludus Tonalis*, Bartok's *Mikrokosmos*, Crumb's *Makrokosmos* as models.

672. Serialism. (3) On dem.

Prerequisite: Music 471.

Classic techniques, symmetrical series, combinatoriality, complementary sets, nonpitch parameters, etc.

673. Advanced Fugue. (3) On dem.

Prerequisite: Music 471.

A study of fugues in Bach's *Well-tempered Clavier* and other exemplary works.

680R. Composition for Master's Degree. (1–6) F, W, Su

Prerequisite: approval of the Music Department graduate faculty, based on evidence of ability in composition manifested in preliminary work.

681. Contemporary Orchestration. (3) On dem.

Prerequisite: Music 481 or 581.

Orchestral techniques, nontraditional ranges, sound production, and sound sources.

683. Advanced Vocal Writing. (3) On dem.

Prerequisite: Music 581.

Extension of part-writing technique for contemporary choral writing, text setting, vocal effects, balance, tone, etc.

687R. Composition. (3) F, W, Su

Prerequisite: Music 588 or equivalent.

691. Contemporary Analysis. (3) On dem.

Prerequisite: Music 491.

The implications of recently developed analytical systems for understanding music.

694R. Independent Readings. (1–3) F, W, Su

Prerequisite: approval of advisory committee.

697A. Scholarly Paper for Master of Music Degree. (2) F, W, Su

Preparation of a formal paper related to the music of the graduate recital. Supervised by the musicology area and graduate advisor.

697B. Recital. (2) F, W, Su

Prerequisite: Music 697A and approval of advisory committee and graduate music faculty.

698A. **Master's Project—Professional Improvement Project.** (2) F, W, Su

Identifying and delineating a project. Study list is constructed and an advisor assigned. Must be taken during first semester concurrently with Music 635.

698B. **Master's Project—Professional Improvement Project.** (2) F, W, Su

Presentation of project and written report.

699R. **Master's Thesis.** (1–9) F, W, Su

Prerequisite: approval of department graduate faculty.

Candidates for the master's degree must demonstrate competence in writing and research before beginning work on thesis.

785. **History of Music Theory.** (3) On dem.

Prerequisite: Music 484, 485, or equivalent.

Content and system of music theory from classical antiquity through the works of Zarlino.

786. **History of Music Theory.** (3) On dem.

Prerequisite: Music 785.

Continuation of Music 785 from the works of Rousseau and Rameau through contemporary theoretical systems.

787R. **Doctoral Composition Study.** (6V) F, W, Su

Prerequisite: admission to DMA program.

Compositional techniques and styles in preparation for doctoral recital.

794R. **Seminar in Music.** (1–3) On dem.

Prerequisite: Music 635 or equivalent and approval of graduate advisory committee.

798R. **Doctoral Composition Project.** (12V) F, W, Sp, Su

Prerequisite: completion of comprehensive examination.

Terminal project for DMA degree.

799R. **Doctoral Dissertation.** (1–9) F, W, Su

Prerequisite: approval of department graduate faculty.

DEPARTMENT OF THEATRE AND FILM

Chairman: Harold R. Oaks, D-581 HFAC, 378-4574

Graduate Coordinator: Robert A. Nelson, F-466 HFAC, 378-3406

Faculty/Specialties

Professors

Bentley, Marion J. (1971) Ph.D., University of Utah, 1968.

Directing, Acting, Dialects, Theatre History.

Danielewski, Tad Z. (1975) BFA, Ohio University, Athens, 1950. Acting, Directing, Film Directing, Film History, Criticism.

Henson, Charles A. (1958) Ed.D., Brigham Young University, 1980. Set Design, Theatre Management, Lighting Design.

Merten, Charles L. (1962) Ph.D., University of Iowa, 1960.

Film History, Theory and Criticism, Directing, Acting.

Oaks, Harold R. (1970) Ph.D., University of Minnesota, Minneapolis, 1964. Child Drama, Children's Theatre, Puppetry, Directing.

Pope, Karl T. (1966) Ph.D., Wayne State University, 1966. Set and Lighting Design, Technical Theatre.

Whitman, Charles W. (1965) Ph.D., University of Minnesota, Minneapolis, 1967. Musical Dance Theatre, Acting, Directing, Playwriting.

Woodbury, Lael J. (1965) Ph.D., University of Illinois, Urbana, 1954. Theatre History, Dramatic Theory and Criticism.

Associate Professors

Jenkins, Jean R. (1967) M.A., Brigham Young University, 1966. Interpretation, Voice and Speech, Storytelling.

Nelson, Robert A. (1979) Ph.D., University of Utah, 1976. Acting, Directing, Theatre History, Dramatic Theory and Criticism, Playwriting.

Assistant Professors

Crosland, Ivan A. (1971) M.A., Brigham Young University, 1965. Acting, Directing.

Golightly, Max C. (1957) M.A., Brigham Young University, 1959. Playwriting, Theatre Arts Education.

Heiner, Barta (1988) MFA, American Conservatory Theatre, 1977. Acting, Directing.

Johnson, Peter N. (1982) M.A., Brigham Young University, 1972. Film Production.

Nibley, Paul (1986) MFA, Columbia University, 1986. Film Production, Screenwriting, Film History and Theory.

Scanlon, Rory R. (1984) MFA, University of Illinois, 1984. Set and Costume Design, Costume History, Lighting Design.

Swenson, Janet L. (1974) M.A., Brigham Young University, 1974. Costume Design, Costume History, Makeup.

Swenson, Sharon (1987) Ph.D., University of Utah, 1988. Film History, Theory, Criticism.

Walker, Oscar Lee (1969) MIE, Brigham Young University, 1975. Technical Theatre, Stage Management.

Graduate Programs and Degrees

Film (MFA)

Theatre Design and Technology (MFA)

Theatre and Film (M.A.)

Theatre and Film (Ph.D.)

Areas of Specialization

Theatre, film, child drama, history, and theory

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Theatre and Film (M.A.)

Admission and Entry

I. Application requirements:

A. Deadlines: University deadlines apply.

B. Entrance examination: General GRE; scores subject to review.

II. Prerequisite: Acceptable undergraduate background in theatre arts or film.

Requirements for Degree

I. Credit hours (32): Minimum 26 course work hours plus 6 thesis hours (ThF. 699R). A minimum of 20 hours must be in theatre/film or theatre/film-related courses.

II. Required courses: ThF. 600, 601, 690, 699R; 731 or 732.

III. Minor: Any approved minor.

- IV. At least one significant production experience, determined in consultation with advisory committee. Evaluation will occur immediately after the production.
- V. Thesis.
- VI. Final examinations:
 - A. Comprehensive written examination.
 - B. Oral defense of thesis.

Theatre Design and Technology (MFA)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; scores subject to review.
 - C. Resumé and portfolio.
 - D. Interview with design/technology faculty.
- II. Prerequisites: The following courses or their equivalents: ThF. 116, 117, 121, 123, 127R, 140, 141R, 143R, 200, 201, 220, 361, 461; Art 108, 422, 433R; CITx. 145, 245, 345.

Requirements for Degree

- I. Credit hours (60): Minimum 60 course work hours, including 6 project hours (ThF. 698R).
- II. Required courses: ThF. 520, 544R, 595R, 599R, 600, 601, 662R, 668, 674R, 690, 698R, 731, 732, 797R.
- III. Electives: 15 hours selected from the following in consultation with advisory committee: ThF. 519, 541R, 542R, 544R, 545R, 562, 670, 678, 697R; Art 600R, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610; CITx. 545.
- IV. Off-campus internship (ThF. 599R).
- V. Project (minimum 6 hours; ThF. 698R): Design and supervision of scenery, lighting, or costumes for at least one full-length production. Must be accepted by design/technology faculty.
- VI. Final examinations:
 - A. Comprehensive written examination.
 - B. Oral defense of project.

Film (MFA)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; scores subject to review.
 - C. Resumé and portfolio of film and written work.
 - D. Interview with area committee.
- II. Prerequisites: A bachelor of arts degree including the following courses or their equivalents: ThF. 117, 123, 188, 202, 288, 361, 480R, 487R, 489R. Equivalencies to be determined by film faculty.

Requirements for Degree

- I. Credit hours (60): Minimum 60 hours, including 3–6 project hours (ThF. 698R).
- II. Required courses: ThF. 547R, 583R, 584, 585R, 586R, 589, 599R, 674R, 680R, 681R, 685R, 690, 788R; 6 hours from 587R, 687R, 688R, 689.
- III. Electives (4–10 hours): To be selected in consultation with advisory committee.
- IV. Project (3–6 hours; ThF. 698R). All projects must be accepted by film faculty.

- A. Option 1: Completed, directorially competent 16-mm film or video production from an original script.
- B. Option 2: Original feature-length screenplay, a budget for that screenplay, a "director's notebook," and the actual production (on film or tape) of three to five of the key dramatic scenes from that screenplay.
- V. Final examinations:
 - A. Comprehensive written examination.
 - B. Oral defense of project.

Theatre and Film (Ph.D.)

Admission and Entry

- I. Deadlines: University deadlines apply.
- II. Entrance examination: General GRE; scores subject to review.

Requirements for Degree

- I. Credit hours (78): Minimum of 45 hours in theatre and film; 15 hours in an approved minor; plus 18 dissertation hours (ThF. 799R). (Language/Skill requirement is not included here.)
- II. Required courses: ThF. 600, 601, 690, 700, 731, 732, 799R.
- III. Language/skill requirement, to be certified by the appropriate language department:
 - A. Option 1: One language (in depth) reading and speaking ability. Demonstrate a thorough familiarity with French, German, Russian, or Spanish in one of the following ways.
 - 1. Complete a minimum of 22 semester hours in the language with a grade of B (3.0) or higher.
 - 2. Earn the first 16 of these hours by special examination; register for the remaining credit from language courses 321, 322, or equivalent.
 - 3. Take a special examination from the language department that will test ability (a) to translate literature in the field competently and (b) to communicate orally in the language.
 - B. Option 2: Two languages (reading ability). One of the languages must be French, German, Russian, or Spanish. The second language may be any language approved by the department and authorized by the Graduate Council. The requirement can be met in either of the following ways:
 - 1. Demonstrate competency in French, German, Russian, or Spanish.
 - 2. Complete 16 semester hours of credit with an average grade of B (3.0) in the languages selected.
 - C. Option 3: One language (reading ability) and one skill subject. Include one of the languages in the second option listed above plus 8–10 hours of computer science, mathematics, and/or statistics as approved by the Graduate Council. Mathematics hours must be beyond Math. 111.
- IV. At least one significant production experience, as determined in consultation with advisory committee. Evaluation will occur immediately after the production.
- V. Dissertation: Three kinds of dissertation research will be accepted: (1) scholarly analysis of theatre, motion picture, or television history, theory, or criticism; (2) research and strong creative achievement in playwrighting or screenwriting and stage or cinematic arts production; and (3) measurement studies.

- VI. Final examinations:
 A. Comprehensive written examination.
 B. Oral defense of dissertation.

THEATRE AND FILM GRADUATE COURSES

516R. Theatre and Film Instruction. (1–6) F, W, alt. term.
 Prerequisite: consent of instructor.

Master class for developing teaching methods and techniques for use in departmental theatre and film courses.

519. Stage Management 2. (1–3) F, W, Sp, Su
 Prerequisite: ThF. 319 or equivalent.

Advanced principles, techniques, and experiences in stage management. Production stage managers chosen from this course.

520. Scenic Design 2. (3) F
 Prerequisite: ThF. 140, 220 or consent of instructor.

Intermediate theory and practice of scenic design for the stage.

522R. Auditions and the Business. (3) F
 Prerequisite: ThF. 124R, 323R, 324R

Auditions, cold reading, resumes, and the business end of acting, music, and dance for the professional performer.

523R. Acting: Recital. (2) W
 Prerequisite: ThF. 124R, 323R, 324R.

Twenty-five to thirty-minute performance of cuttings from varied genres.

524R. Acting: Advanced Performance. (3) F, W, Sp, Su
 Prerequisite: ThF. 124R, 323R, 324R

Performance option: performance and written analysis of approved role in a major production. Teaching option: assistance in acting classes and weekly seminar.

526. Sound Design 2. (2) W
 Prerequisite: ThF. 220, 326 or equivalent.

Sound theory, practice, and methodology of studio recording, reinforcement, and mixing.

527. Storytelling. (2) alt. sem., alt. term
 Theory, technique, and practice.

540R. Workshop 2: Acting. (1–6) F, W, Sp, Su
 Prerequisite: consent of instructor.

Advanced experience in production: acting.

541. Set Construction 3. (3) F
 Advanced experience in production: construction.

542R. Theatre Production 3. (1–3) F, W, Su
 Prerequisite: 143R, 343R or equivalent.

Advanced experience in production: technical crew.

543R. Workshop 2: Directing. (1–6) F, W, Sp, Su
 Prerequisite: consent of instructor.

Advanced experience in production: directing.

544R. Workshop: Design. (1–6) F, W, Sp, Su
 Prerequisite: consent of instructor.

Advanced experience in production: design.

545. Costume Construction 3. (1–6) F, W
 Prerequisite: ThF. 543R, 544R or consent of instructor.
 Special construction: armor, masks, etc.

547R. Workshop 2: Film Crew. (1–6) F, W, Sp, Su
 Prerequisite: consent of instructor.
 Practical experience working on a motion picture crew.

552R. Creative Dramatics and Improvisation. (3) W, alt. Su

Informal or improvised dramatic techniques with children, adolescents, and/or adults.

562. Costume Design 3. (3) W, Alt. Sp
 Prerequisite: ThF. 220, 362, 462, 544R, 595R, or consent of instructor.

Advanced theory and practice in costume design for stage and screen.

572R. Theatre for Children. (2) W
 Theories, techniques, and experience in creating formal drama for the child and youth audience.

578R. Advanced Playwriting. (2–6) F, W, alt. term
 Prerequisite: ThF. 378R.

Seminar in playwriting; individual consideration of manuscripts, professional orientation.

579R. Playwright's, Director's, Actor's Workshop. (4) W
 Prerequisite: by audition only
 "Family" of professionally oriented artists probing new work through script study, improvisations, and production.

581. Art Direction. (3) W alt. yr.
 Prerequisite: ThF. 480R or equivalent and consent of instructor.
 Fundamentals of motion picture/television art—direction, design, and technical backup

582R. Film Postproduction Sound. (3) W
 Prerequisite: ThF. 482.

Advanced theories, techniques, and practices of film postproduction.

583R. Film Editing 1. (3) W
 Prerequisite: ThF. 480R, 589 or equivalent and consent of instructor.

Basic comprehension of the film-editing process, including theory and practical experience

584. Film Sound (3) W
 Prerequisite: ThF. 480R, 589, or equivalent and consent of instructor

Overall study of motion picture sound recording and theory.

585. Screenwriting I (3) W
 Prerequisite: ThF. 117, 123, 480R, or equivalent and consent of instructor.

Theory and technique of writing dramatic screen plays.

586R. Cinematography (3) W
 Prerequisite: ThF. 480R, 589, or equivalent and consent of instructor.

Lecture, demonstrations, and hands-on experience covering script interpretation, composition cameras, exposure, lighting, and styles of film.

587R. Film Genres. (3) W
 Intensive study of major film genres: western, musical, propaganda, and comedy.

589. Film Production Management. (3) F
 Prerequisite: ThF. 117, 123, 188, 288, or equivalent, and consent of instructor.

Overall view of how production of a motion picture is organized from beginning through completion.

595R. Workshop 2: Special Projects. (1–6) F, W, Sp, Su
 Advanced experience in production: special projects.

599R. Cooperative Education. (1–9) F, W, Sp, Su
Prerequisite: consent of instructor.
Off-campus experience in stage, film, or television writing, directing, acting, designing, or managing.

600. Advanced History 1: Theatre. (3) Alt. F, Alt. Sp
Prerequisite: ThF. 200, 201.
Primitive and classical theatre through seventeenth century.

601. Advanced History 2: Theatre. (3) Alt. W, Alt. Su
Prerequisite: ThF. 200, 201.
Theatre during eighteenth through twentieth centuries.

644. Advanced Scenic Design. (3) W
Prerequisite: ThF. 140, 220, 340R, 520, or equivalent.
Advanced theory and practice in setting design for stage.

660R. Advanced Voice and Interpretation. (3)
Prerequisite: ThF. 121, 122, 123, 325R.
Continuation of ThF. 325R. Polishing vocal and interpretative skills through performances.

662R. Seminar in the Theory and History of Theatrical Costuming. (3) F, Alt. Su
Prerequisite: ThF. 220, 295R, 362, 544R, 562, 595R, or equivalent.
Major movements in costume and evolution of costuming theory, providing strong research and design experience.

664. Theatre Management 1. (2) F
Theory and practice, including play selection, budget, and promotion.

665. Theatre Management 2. (2) W
Theory and practice, including box office, theatre plant, and personnel.

668R. Special Studies in Theatre, Film, or Television. (1–3) F, W, Sp, Su
Supervised research in selected historical, theoretical, or critical problems.

670. Advanced Set Construction. (3) W
Prerequisite: ThF. 140, 340, 541, or equivalent.
Special problems in scenery construction and rigging.

671R. Advanced Directing. (3) F, Alt. term
Prerequisite: ThF. 200, 201, 361, 461, or equivalent.
Theories and techniques of directing for the stage through directing projects for public presentation.

674R. Projects in Theatre and Film Arts. (1–4) F, W, Sp, Su
Supervised applied theory in playwriting/screenwriting, directing, acting, criticism, stagecraft, etc.

677R. Film Production Administration. (2) F

678. Advanced Stage Lighting. (3) W
Prerequisite: ThF. 142, 220, 321, or equivalent.
Theory and techniques of theatrical lighting.

680R. Film Production 2. (5) W
Prerequisite: ThF. 480R, 583R, 584, 585R, 586, or equivalent and consent of instructor.
Advanced filmmaking production course.

681R. Film Producing and Distribution. (3) F
Introduction to independent and studio production including packaging, funding, negotiating, distributing, and concluding sale arrangements.

685R. Screenwriting 2. (3) F
Prerequisite: ThF. 585 and consent of instructor.
Advanced practical experience in screenwriting.

687R. Motion Picture Directors. (3) W
In-depth study of representative body of motion pictures by one major film director such as John Ford, Howard Hawks, Ingmar Bergman, or William Wyler.

688R. The American Motion Picture. (3) F
In-depth study of American motion picture as an art form and as an industry.

689. Motion Picture History. (3) F
Worldwide survey of motion picture history.

690. Introduction to Graduate Studies in Theatre and Film. (3) F, Alt. Su
Required of all graduate students during first semester or first term of registration that class is offered.

697R. Seminar and Production: Special Theatre Forms. (2–3) F, W, Sp, Su
Prerequisite: consent of instructor.
Theory and practice directing in special forms: readers theatre, avant-garde, etc.

698R. Master's Project. (1–6) F, W, Sp, Su

699R. Master's Thesis. (1–9) F, W, Sp, Su

700R. Master Seminar. (3) Annually
Selected topics.

731. Dramatic Theory and Criticism 1. (3) Alt. F, Alt. Sp
Development from beginning to nineteenth century.

732. Dramatic Theory and Criticism 2. (3) Alt. W, Alt. Su
Development from nineteenth century to present.

772R. Seminar in Child Drama. (3) F
Prerequisite: ThF. 552R, 572R, or consent of instructor.
Advanced theory and research in drama and theatre with and for children.

788R. Symposium for Filmmakers. (3) F
Prerequisite: ThF. 388, 480R, 589, previous or concurrent enrollment in ThF. 680R, and consent of instructor.

Symposium to stimulate and enhance perception and understanding of motion picture industry and its historical, contemporary, and social context.

797R. Research. (Arr.) F, W, Sp, Su

799R. Doctoral Dissertation. (1–18) F, W, Sp, Su



COLLEGE OF HUMANITIES

Dean: Todd A. Britsch, Professor, Humanities (2054 JKHB)
Associate Dean: Douglas H. Thayer, Professor, English (2054 JKHB)

The following departments are in the College of Humanities:

- Asian and Near Eastern Languages
- English
- French and Italian Languages
- Germanic and Slavic Languages
- Humanities, Classics, and Comparative Literature
- Linguistics
- Philosophy
- School of Library and Information Sciences
- Spanish and Portuguese Languages

Graduate study in the humanities prepares a student with the skills and methods to deal independently and in depth with the major manifestations of human culture—language, literature, the arts, and ideas. Departmental and collegewide programs have been designed to help students critically interpret the materials of the humanities. These programs require careful reading of original and secondary sources, development of critical skills, diligent analysis of language, and precise writing of papers, theses, and other research projects. Most programs make intensive use of the library and its resources. Graduate study differs from undergraduate work in placing the primary responsibility for developing a coherent program and for mastering materials directly on the individual student. Independent study, both within and without formal courses, replaces requirement-directed schooling. In addition to the pleasure and stimulation it provides, graduate education in the humanities is valuable preparation for teaching, scholarship, and other professional training.

ACADEMIC AND RESEARCH SUPPORT AREAS

Humanities Research Center

Director: Randall L. Jones (3060 JKHB)

The Humanities Research Center provides an array of technological tools, resources, and expertise to foster quality research and scholarship in the College of Humanities. The center is especially active in the production of teaching and research materials. For example, it houses a Kurzweil Optical Scanner, which has made possible, among other publications, the generation of concordances and dictionaries on particular writers. In addition to computer and audio equipment, the center has a variety of video capabilities. Along with providing research support, the center has in the past few years become a world leader in computer-assisted language instruction and translation.

Center for the Study of Christian Values in Literature

Director: Jay Fox (3134 JKHB)

The center was established in 1980 to affirm the importance of religious and moral values in the creation and study of imaginative literature. It provides both a focus for activity and an encouragement to students, teachers, writers, scholars, and readers who believe in the importance of a value-centered literary tradition. In addition to sponsoring a variety of programs and activities, the center publishes a journal, *Literature and Belief*, and a monograph series.

BYU Studies

Editor: Edward A. Geary, Jr. (3168 JKHB)

Fully titled *Brigham Young University Studies, A Voice for the Community of LDS Scholars*, this journal is published quarterly by the College of Humanities. It provides a distinguished outlet for scholarly work in the humanities and social sciences. Editorial internships with the journal and with other college publications are available for graduate students.

Reading-Writing Center

Director: William (Bill) Shakespeare (1010 JKHB)

The center was established to assist students and faculty in improving their reading and writing skills. Graduate students benefit particularly from critical evaluations of drafts of seminar papers and theses. Graduate students with advanced reading and writing skills may serve as interns in the center.

INTENSIVE LANGUAGE EXPERIENCES

English Language Center

Director: Glen W. Probst (2113 JKHB)

The English Language Center offers a program of intensive English language training. Graduate students in Teaching of English as a Second Language (TESL) may use the center as part of their training.

Foreign Language Houses

Coordinator: Hans W. Kelling (2054 JKHB)

Graduate students wishing an in-depth language training experience may apply for residence in one of the college's foreign language houses, where all activities are conducted in the designated languages. There are houses for men and for women in French, Russian, Italian, German, Japanese, Spanish, Portuguese, Chinese, Hebrew, Arabic, and Korean. Graduate

students may participate as students or senior residents.

Summer Language Institute

Director: Hans W. Kelling (2054 JKHB)

During the summer term the College of Humanities offers a program that allows a student total immersion in a foreign language while receiving course credit. Housing is provided for participants where the language can be applied on a practical level. Employment is available for graduate students.

Collegewide Graduate Program in Language Acquisition

Coordinator: Robert A. Russell, 4062 JKHB, 378-6405

The College of Humanities offers a collegewide program in language acquisition described below. (Other graduate programs are described under individual departmental headings.)

LANGUAGE ACQUISITION

Graduate Program and Degree

Language Acquisition (M.A.)

Areas of Specialization

Arabic, Chinese, French, German, Japanese, Korean, Portuguese, Russian, Scandinavian, and Spanish.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Language Acquisition (M.A.)

Admission and Entry

- I. Deadlines: University deadlines apply.
- II. Prerequisite: Baccalaureate degree and strong background in the intended language of specialization.
- III. Fall and winter semesters (fall recommended).

Requirements for Degree

- I. Credit hours (33): Minimum 27 course work hours plus 6 thesis hours (699R).
- II. Required courses: Ling. 540, 600, 641, 660, 677, 699R.
- III. Departmental specialization: 12 hours determined in consultation with advisory committee. Candidates may specialize in Arabic, Chinese, French, German, Japanese, Korean, Portuguese, Russian, Scandinavian, or Spanish.
- IV. Language requirement: Reading and speaking ability (301/311 level) in a language other than English in addition to the language of specialization.
- V. Thesis.
- VI. Examination: Oral defense of thesis.

DEPARTMENT OF ASIAN AND NEAR EASTERN LANGUAGES

Chairman: Masakazu Watabe, 4052 JKHB, 378-3396

Graduate Coordinator: Robert Russell, 4062 JKHB, 378-6405

Faculty/Specialties

Associate Professors

Carter, Steven Douglas (1980) Ph.D., University of California, Berkeley, 1980. Medieval Japanese Cultural History and Literature, Modern Japanese Novel.

Chi, T. Richard (1983) Ph.D., University of California, Los Angeles, 1983. Syntax and Semantics, Second Language Acquisition, Chinese.

Parkinson, Dilworth B. (1980) Ph.D., University of Michigan, Ann Arbor, 1982. Sociolinguistics, Computer-assisted Instruction, Arabic.

Ricks, Stephen David (1981) Ph.D., University of California, Berkeley, 1982. Hebrew, Near Eastern Languages, Comparative Religion.

Russell, Robert A. (1982) Ph.D., Harvard University, 1977. Second Language Acquisition, Computer-assisted Instruction, Natural Language Processing, Japanese.

Watabe, Masakazu (1977) Ph.D., University of Southern California, 1978. Linguistics, Japanese.

Williams, Gary S. (1966) Ph.D., University of Washington, 1973. Chinese Language and Literature.

Assistant Professors

Peterson, Mark A. (1983) Ph.D., Harvard University, 1987. Korean Language and History.

Wright, David P. (1984) Ph.D., University of California, Berkeley, 1984. Hebrew, Near Eastern Languages, Bible and Jewish Studies.

Graduate Programs and Degree

Language Acquisition (Arabic, Chinese, Japanese, or Korean) (M.A.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

See the description of M.A. programs in the preceding Collegewide Graduate Program in Language Acquisition section.

ASIAN AND NEAR EASTERN GRADUATE COURSES

CHINESE (MANDARIN) GRADUATE COURSES

599R. Cooperative Education: Internship. (9) F, W, Sp, Su
Prerequisite: Chin. 301.

On-the-job cultural and/or language experience.

670R. Tutorial Internship in Chinese. (1-3) F, W, Sp, Su

Individual research in cooperation with graduate faculty member in problems relating to Chinese literature and language. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.

680R. Special Studies in Chinese. (1–3) F, W, Sp, Su

Individual study supervised by graduate faculty member in varying topics of specific interest in Chinese literature and language.

690R. Seminar in Chinese. (1–3) F, W, Sp, Su

Group studies supervised by graduate faculty member in varying topics of specific interest in Chinese literature and language.

699R. Master's Thesis. (1–6) F, W, Sp, Su**JAPANESE GRADUATE COURSES****599R. Cooperative Education: Internship.** (9) F, W, Sp, Su
Prerequisite: Japan. 301.

On-the-job cultural and/or language experience.

670R. Tutorial Internship in Japanese. (1–3) F, W, Sp, Su

Individual research in cooperation with graduate faculty member in problems relating to Japanese literature and language. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.

680R. Special Studies in Japanese. (1–3) F, W, Sp, Su

Individual study supervised by graduate faculty member in varying topics of specific interest in Japanese literature and language.

690R. Seminar in Japanese. (1–3) F, W, Sp, Su

Group studies supervised by graduate faculty member in varying topics of specific interest in Japanese literature and language.

699R. Master's Thesis. (1–6) F, W, Sp, Su**KOREAN GRADUATE COURSES****599R. Cooperative Education: Internship.** (9) F, W, Sp, Su
Prerequisite: consent of coordinator and department.

On-the-job cultural and/or language experience. Students must meet departmental requirements and consult coordinator prior to enrollment. Report required.

670R. Tutorial Internship in Korean. (1–3) F, W, Sp, Su

Individual research in cooperation with graduate faculty member in problems relating to Korean literature and language. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.

680R. Special Studies in Korean. (1–3) F, W, Sp, Su

Individual study supervised by graduate faculty member in varying topics of specific interest in Korean literature and language.

690R. Seminar in Korean. (1–3) F, W, Sp, Su

Group studies supervised by graduate faculty member in varying topics of specific interest in Korean literature and language.

699R. Master's Thesis. (1–6) F, W, Sp, Su**NEAR EASTERN LANGUAGES AND LITERATURE**

Ancient: Akkadian, Aramaic, Coptic, Egyptian, Hittite, Sumerian, Syriac, and Ugaritic Courses

511R. Studies in Ancient Near Eastern Languages. (2–4) F, W on dem.

Grammar and reading skills.

521R. Special Topics in Ancient Near Eastern Literature. (2–3) On dem.

Historical and comparative studies of ancient Near Eastern literature.

ARABIC GRADUATE COURSES**531R. Advanced Topics in Arabic.** (3) On dem.

Prerequisite: consent of instructor.

Advanced studies in Arabic language and literature.

670R. Tutorial Internship in Arabic. (1–3) On dem.

Individual research in cooperation with graduate faculty member in problems relating to Arabic literature and language. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.

680R. Special Studies in Arabic. (1–3) On dem.

Individual study supervised by graduate faculty member in varying topics of specific interest in Arabic literature and language.

690R. Seminar in Arabic. (1–3) On dem.

Group studies supervised by graduate faculty member in varying topics of specific interest in Arabic literature and language.

699R. Master's Thesis. (1–6) On dem.**HEBREW GRADUATE COURSES****531R. Studies in Hebrew.** (3V) F, W, Su

Prerequisite: Heb. 331.

DEPARTMENT OF ENGLISH

Chairman: William A. Wilson, 3146 JKHB, 378-3053

Graduate Coordinator: Steven C. Walker, 3142 JKHB, 378-3053

Faculty/Specialties**Professors**

Arnold, Marilyn (1969) Ph.D., University of Wisconsin, Madison, 1968. Twentieth-Century American Fiction.

Cracroft, Richard H. (1963) Ph.D., University of Wisconsin, Madison, 1970. Nineteenth-Century American Literature, Literature of the American West, Mormon Literature, Creative Writing.

England, Eugene (1977) Ph.D., Stanford University, 1973. Nineteenth-Century American Literature, Mormon Literature, Creative Writing.

Fox, Charles Jay (1980) Ph.D., Purdue University, 1971. Late Nineteenth and Early Twentieth-Century English Literature.

Gassman, Byron W. (1960) Ph.D., University of Chicago, 1960. Restoration and Eighteenth-Century English Literature, English Novel.

Geary, Edward A. (1968) Ph.D., Stanford University, 1971.

Late Nineteenth and Early Twentieth-Century English Literature, Twentieth-Century Literature, English Novel.

Harris, John B. (1958) Ph.D., Wayne State University, 1965. English Romanticism, English Education.

Harris, John S. (1962) M.A., Brigham Young University, 1958. Technical Writing, American Literature 1870–1940.

- Holland, Jeffrey R. (1974) Ph.D., Yale University, 1973. American Studies, American Literature.
- Lambert, Neal E. (1966) Ph.D., University of Utah, 1966. American Realism and Naturalism, Literature of the American West.
- Luthy, Melvin J. (1971) Ph.D., Indiana University, Bloomington, 1967. English Language, Linguistics.
- Murphy, John J. (1984) M.A., St. John's University, 1961. Twentieth-Century American Fiction.
- Norris, G. Leslie (1983) M. Phil., Southampton University (England), 1958. Creative Writing, The Metaphysical Poets, Anglo-Welsh Literature, History of the Novel, Contemporary British Literature.
- Poulsen, Richard C. (1975) Ph.D., University of Utah, 1975. Folklore and Mythology, Critical Theory, American Studies.
- Skousen, Royal (1979) Ph.D., University of Illinois, Urbana, 1972. Linguistics (Phonology, Morphology, Probabilistic Linguistics, Mathematical Linguistics, Historical Linguistics), English Linguistics (Structure of English, English Spelling).
- Tanner, Stephen L. (1978) Ph.D., University of Wisconsin, Madison, 1969. American Literature, Literary Criticism.
- Thayer, Douglas H. (1957) MFA, University of Iowa, 1962. Creative Writing.
- Thomas, Gordon K. (1976) Ph.D., Tulane University of Louisiana, 1968. English Romantic Literature, Shakespeare.
- Thomas, John Alfred (1962) Ph.D., University of Maryland, College Park, 1962. English Renaissance Literature, Seventeenth-Century English Literature.
- Wilson, William A. (1984) Ph.D., Indiana University, 1974. Folklore and Mythology, American Studies, Journal Editing.

Associate Professors

- Cronin, Gloria L. (1984) Ph.D., Brigham Young University, 1980. Nineteenth-Century American Literature, Jewish American Literature, Folklore.
- Evans, David Louis (1954) Ph.D., University of Utah, 1968. Modern American Literature.
- Johstoneaux, Raphael (1986) Ph.D., George Peabody College for Teachers of Vanderbilt University, 1980. English Education, Composition Theory and Pedagogy.
- Jorgensen, Bruce Wayne (1975) Ph.D., Cornell University, 1978. Creative Writing (especially Fiction), Nineteenth-Century American Literature (especially the "American Renaissance"), Contemporary British Literature.
- Pedersen, Elray (1983) Ph.D., University of Minnesota, 1977. English Education, Teaching of Writing, Linguistics.
- Tanner, John S. (1982) Ph.D., University of California, Berkeley, 1980. Sixteenth and Seventeenth-Century English Literature, Religious Approaches to Literature.
- Taylor, Sally T. (1978) Ph.D., University of Utah, 1975. Creative Writing, Drama.
- Walker, Steven C. (1966) Ph.D., Harvard University, 1973. Victorian Literature, Bible as Literature.

Assistant Professors

- Boswell, Grant M. (1984) Ph.D., University of Southern California, 1985. Rhetorical Theory, Composition Theory and Pedagogy.
- Clark, Gregory D. (1985) Ph.D., Rensselaer Polytechnic Institute, 1985. Rhetorical Theory and History, Early American Literature, Composition Theory, Technical Writing.
- Corman, Catherine T. (1985) Ph.D., University of California, Los Angeles, 1985. Medieval English Literature, Old English.

- Cowles, David L. (1985) Ph.D., University of Chicago, 1985. Victorian Literature, English Novel.
- Hansen, Kristine (1987) Ph.D., University of Texas, Austin, 1987. Rhetoric, Composition Theory.
- Spencer, Darrell K. (1985) Ph.D., University of Utah, 1985. Creative Writing, American Novel.
- Thomas, Paul Roger (1980) Ph.D., University of York (England), 1982. Chaucer, Middle English Language and Literature, English Renaissance Literature.
- Young, Bruce (1983) Ph.D., Harvard University, 1983. English Renaissance Literature, Shakespeare, Literary Theory and Criticism.

Graduate Program and Degree English (M.A.)

Areas of Specialization

English Literature, American Literature, English Language.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

English (M.A.)

Admission and Entry

- I Application requirements
 - A Deadline: March 15.
 - B Entrance examination: GRE advanced literature subject test.
- II Prerequisites.
 - A Undergraduate major or its equivalent.
 - B One course in literary criticism (Engl. 351 or equivalent) and one course in the history of the English language (Engl. 324 or equivalent).
 - C Reading knowledge of one foreign language, preferably French or German.
- III Entry time: Fall semester only.

Requirements for Degree

- I Credit hours (33): Minimum 27 course work hours plus 6 thesis hours (Engl. 699R).
- II Required courses: Engl. 695R (1 hour during first fall semester of study, 2 hours during final winter semester), 699R.
- III Minimum of 6 hours in each of the following areas: English literature, American literature, and English language.
- IV Electives: Minimum of 6 hours determined in consultation with faculty advisor.
- V Limitation on individual readings courses: No more than 6 hours of individual readings (Engl. 590R) may be applied to the required 18 hours in basic courses, and no more than 3 hours of individual readings may be applied to any one of the specified areas.
- VI Thesis:
 - A Option 1: A thesis on a topic demanding research, criticism, or both.
 - B Option 2: Three long papers dealing with three different areas of English literature or American literature or language and on topics demanding research, criticism, or both.

- C. Option 3: A substantial creative work and two long papers dealing with two different areas of English literature or American literature or language and on topics demanding research, criticism, or both.
- D. Option 4: An extended creative project, by application only. Students must submit as an application a representative sampling of their creative work to the creative writing chairman. Members of the creative writing committee will pass on the application; they may specify courses in creative writing that the student must take.

VII. Examinations: Final oral examination and defense of thesis.

ENGLISH GRADUATE COURSES

500R. Eminent American Writers. (1-3)

Different writers each semester.

510R. Eminent English Writers. (1-3)

Different writers each semester.

515R. Advanced Scholarly Writing. (3)

Workshop for potential graduate students, graduate students, and professionals in all disciplines in preparing the thesis, dissertation, book chapter, and article.

516. Advanced Technical Writing. (3)

Prerequisite: Engl. 316 or consent of instructor.

Advanced technical writing concepts, including literature of technical writing, liaison with technical staff, communication networks, rhetoric of graphics, and teaching and freelancing technical writing.

518R. Advanced Creative Writing. (3)

Prerequisite: Engl. 318R, 319R, or consent of instructor.

Writing fiction, poetry, drama, and the essay; individual consideration of manuscripts; professional orientation. May be repeated for credit with consent of instructor.

520R. Studies in Theme and Form. (1-3)

Topics vary: theory of myth, Gothic fiction, Utopian literature, tragic and comic modes, etc.

521R. Studies in Language and Rhetoric. (1-3)

Prerequisite: Engl. 324.

Study of a particular period in the history of the language or a particular aspect of it, such as morphology or syntax.

524. Seminar in College and Adult Reading. (2)

Prerequisite: consent of instructor.

Theory and methods of teaching critical reading; diagnosis and remediation, review of materials, reading in content areas, and learning laboratory functions.

529. Structure of Modern English. (3)

Prerequisite: Engl. 328, Ling. 325, or consent of instructor.

Advanced study of English syntax through modern grammars; theories underlying those grammars.

533. Semantics. (3)

Theory and practice of semantic analysis with special emphasis on Jakobsonian and Peircean semiotics.

590R. Individual Readings in English. (1-3)

Prerequisite: approval of graduate coordinator.

Individualized study of language and/or literature beyond what is offered in the curriculum. May not be substituted for another catalogue course.

599R. Cooperative Education. (1-9) F, W, Sp, Su

Prerequisite: consent of graduate coordinator.

On-the-job training.

624. Old English. (3)

Study of Old English grammar and vocabulary to understand traditional syntactical patterns and to read various types of Old English prose and poetry.

625. Beowulf. (3)

Prerequisite: Engl. 624.

Close reading of the poem in the original, emphasizing literary and cultural values.

626. Middle English. (3)

Detailed study of the principal dialects as illustrated in the literature of the period.

631. Studies in the English Novel. (3)

Intensive analysis of literary values and techniques in selected novels. Not a survey course.

635. Studies in the American Novel. (3)

Various approaches to the novel, emphasizing the formal. Focus may vary according to instructor and needs of students.

641. Studies in Drama. (3)

Intensive study of English drama; independent research.

642R. Methods of Teaching College Composition. (1-3)

Prerequisite: student instructorship in English.

Theory and practice of teaching English composition on the college level.

650. Studies in Literary Criticism. (3)

Prerequisite: Engl. 351. Recommended: Engl. 352.

Modern critical theory and practice applied to specific literary works.

661. Studies in Colonial and Puritan Literature. (3)

Intensive readings in major writers of the emerging American literary and cultural traditions before 1800.

662. Studies in American Romanticism. (3)

Rise and fruition of the romantic movement in American literature from Freneau to Lowell.

664. Studies in American Realism and Naturalism. (3)

Dominant cultural and aesthetic trends in American literature since the Civil War.

666. Studies in Modern American Literature. (3)

667. Studies in Folklore. (3)

Prerequisite: Engl. 391 or consent of instructor.

Directed study in folklore and folkways, including Mormon heritage and tradition. Collecting, analyzing, and editing.

669R. Teaching English in the Secondary Schools. (2)

Prerequisite: Engl. 377 or consent of instructor.

Literature, writing, language, and reading materials appropriate to English courses, and the effective use of these materials.

671. Studies in English Medieval Literature. (3)

A close reading in the original of a principal work, such as *Troilus and Criseyde*, *Piers Plowman*, or *Sir Gawain and the Green Knight*, emphasizing its relation to other literature, culture, and history of the period.

672. **Studies in English Renaissance Literature.** (3)
Research in individual authors, styles, influences, and trends. Emphasis varies according to instructor.
673. **Studies in English Classicism.** (3)
In-depth study of selected writers from 1660 to 1780. Not a survey course.
674. **Studies in English Romanticism.** (3)
In-depth study of selected writers and significant trends from 1780 to 1832. Not a survey course.
675. **Studies in Victorian Literature.** (3)
Detailed analysis of literary genres, values, and techniques in representative works of the period. Not a survey course.
676. **Studies in Modern British Literature.** (3)
680. **Studies in Contemporary Literature.** (3)
Specific trends in literature and criticism; students may select areas of interest.
682. **Problems in Shakespearean Scholarship and Criticism.** (3)
Prerequisite: Engl. 382 or consent of instructor
- 695R. **Proseminar in English.** (1-2)
Materials, tools, and objectives of research in English. One hour required of all graduate students first fall semester of study; 2 hours required final winter semester
- 699R. **Master's Thesis.** (Arr.)
See options described under master's program in English.
715. **Writing for Faculty.** (3)
Prerequisite: faculty status.
Practical workshop approach to writing and evaluating written work.

DEPARTMENT OF FRENCH AND ITALIAN

The Department of French and Italian does not offer a graduate degree in literature but participates in the Collegewide Graduate Program in Language Acquisition.

FRENCH GRADUATE COURSE

- 699R. **Master's Thesis.** (1-6) F, W, Sp, Su

DEPARTMENT OF GERMANIC AND SLAVIC LANGUAGES

Chairman: Gary L. Browning, 4096 JKHB, 378-4924
Associate Chairman and Graduate Coordinator: Alan F. Keele, 4090 JKHB, 378-3153

Faculty/Specialties

Professors

Browning, Gary L. (1974) Ph.D., Harvard University, 1974.
Russian Literature (Nineteenth and Twentieth-Century Writers).

- Davis, Garold Neil (1968) Ph.D., Johns Hopkins University, 1962. German Literature (Romanticism, Realism, *Heimatdichtung*, Goethe's *Faust*).
- Folsom, Marvin H. (1961) Ph.D., Cornell University, 1961.
German Language, Structure of Modern German, History of German Language, Biblical German.
- Jarvis, Donald K. (1970) Ph.D., Ohio State University, 1970.
Russian Language (Pedagogy, Testing).
- Jones, Randall L. (1978) Ph.D., Princeton University, 1970.
German Language (Technology and Second-Language Acquisition, Testing), Pedagogy.
- Keele, Alan F. (1971) Ph.D., Princeton University, 1971. German Literature (Earlier Twentieth Century, 1945-Present).
- Kelling, Hans-Wilhelm (1962) Ph.D., Stanford University, 1967. German Literature (*Goethezeit*), Cultural History, Pedagogy.
- Plummer, Thomas G. (1985) Ph.D., Harvard University, 1972. German Literature (Weimar Period), German Film.
- Rogers, Thomas F. (1969) Ph.D., Georgetown University, 1968. Russian Literature (Twentieth-Century Drama), Film.
- Associate Professors**
- Baker, Joseph O. (1967) Ph.D., Tulane University, 1968.
German Literature (Kleist, Realism).
- Swanson, Alan M. (1982) Ph.D., University of Chicago, 1973.
Scandinavian and Comparative Literature (Swedish, Eighteenth-Century Comedy), Scandinavian Emigration Literature, Hymnody

Assistant Professor

- Hart, David K. (1984) Ph.D., University of Washington, 1979. Russian Language (Phonology, Morphology, Syntax).

Graduate Programs and Degrees

Language Acquisition (German, Russian, or Scandinavian) (M.A.)
German Literature (M.A.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Language Acquisition (M.A.) (German, Russian, Scandinavian)
See description of program in preceding Collegewide Graduate Program in Language Acquisition section.

German Literature (M.A.)

Admission and Entry

- I. Deadlines: April 1 for fall semester (July 1 for admission only; no financial aid or teaching assistantships considered); August 1 for winter semester (November 1 for admission only; no financial aid or teaching assistantships considered).
- II. Prerequisites:
 - A. Baccalaureate degree in German or a related field such as English, comparative literature, humanities, or other major with a strong German component.
 - B. Pass the departmental language proficiency examination.
- III. Entry times: Fall and winter semesters.

Requirements for Degree

1. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Germ. 699R).

- II. Required courses:
 - A. 3 hours of comparative literature: CLit. 610.
 - B. 3 hours from CLit. 620R, 630R, 640R, 650R, 660R.
 - C. 6 hours from Germ. 440R/640R, 441R/641R, 442R/642R, 670R (3 hours maximum), 680R (3 hours maximum), 496R/690R.
 - D. 12 hours of Germ. 640R, 641R, 642R, 690R.
 - E. 3 hours of Germ. 699R (thesis) during the first year.
3 hours of Germ. 699R (thesis) during the second year.
- III. Other requirements:
 - A. A reading list.
 - B. A reading knowledge of a second foreign language (fourth semester or equivalent).
- IV. Examination: An oral examination on the reading list, the course work, and the thesis.

GERMAN GRADUATE COURSES

615. **Applied German Linguistics.** (3) On dem.
Prerequisite: Germ. 422 or equivalent.
Applying linguistics to the problems of teaching German grammar.
- 640R. **German Literary Periods and Movements.** (3) Alt. sem.
In-depth study of a period or movement such as medieval, Renaissance, baroque, eighteenth century, Romanticism, realism, *fin-de-siècle* Vienna, naturalism, 1890–1945, 1945–present.
- 641R. **Studies in German Literary Genres.** (3) Alt. sem.
In-depth study of a genre such as drama, novel, novella, lyric, film.
- 642R. **Major German Authors.** (3) Alt. sem.
In-depth study of one author such as Lessing, Goethe, Schiller, Kleist, Storm, Rilke, Brecht, Mann, Kafka, Hofmannsthal, etc.
- 670R. **Tutorial Internship in German.** (1–3) F, W, Sp, Su
Individual research in cooperation with graduate faculty member in problems relating to German. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.
- 680R. **Special Studies in German.** (1–3) F, W, Sp, Su
Individual study supervised by graduate faculty member in varying topics of specific interest in German.
- 690R. **Seminar in German.** (1–3) F, W
Group studies supervised by graduate faculty member in varying topics of specific interest in German.
- 699R. **Master's Thesis.** (1–6) F, W, Sp, Su

RUSSIAN GRADUATE COURSES

- 670R. **Tutorial Internship in Russian.** (1–3) F, W, Sp, Su
Individual research in cooperation with graduate faculty member in problems relating to Russian. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.
- 680R. **Special Studies in Russian.** (1–3) F, W, Sp, Su
Individual study supervised by graduate faculty member in varying topics of specific interest in Russian.

- 690R. **Seminar in Russian.** (1–3) F, W, Sp, Su
Group studies supervised by graduate faculty member in varying topics of specific interest in Russian.
- 699R. **Master's Thesis.** (1–6) F, W, Sp, Su

SCANDINAVIAN STUDIES GRADUATE COURSES

529. **Old Norse—Icelandic.** (4) F, W, Sp, Su
Prerequisite: knowledge of a modern Scandinavian language helpful but not required.
- 670R. **Tutorial Internship in Scandinavian.** (1–3) F, W, Sp, Su
Individual research in cooperation with graduate faculty member in problems relating to Scandinavian. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.
- 680R. **Special Studies in Scandinavian.** (1–3) F, W, Sp, Su
Individual study supervised by graduate faculty member in varying topics of specific interest in Scandinavian.
- 690R. **Seminar in Scandinavian.** (1–3) F, W, Sp, Su
Group studies supervised by graduate faculty member in varying topics of specific interest in Scandinavian.
- 699R. **Master's Thesis.** (1–6) F, W, Sp, Su

DEPARTMENT OF HUMANITIES, CLASSICS, AND COMPARATIVE LITERATURE

Chairman: Thomas G. Plummer, 3010-A JKHB, 378-4448
Graduate Coordinator: Steven P. Sondrup, 3003 JKHB, 378-2579

Faculty/Specialties

Professors

- Britsch, Todd A. (1966) Ph.D., Florida State University, 1966.
Humanities (especially Art and Society, Interrelations of Arts, Winkelmann, Technology and Culture).
- Mackay, Thomas W. (1964) Ph.D., Stanford University, 1972.
Classics, Patristics and Early Medieval Studies, Textual Criticism.
- Peer, Larry H. (1975) Ph.D., University of Maryland, College Park, 1969. Comparative Literature (especially Romanticism, Theory).
- Plummer, Thomas G. (1985) Ph.D., Harvard University, 1972. Weimar Period of German Literature and German Film, Reader Response Theory.
- Sondrup, Steven P. (1973) Ph.D., Harvard University, 1974.
Comparative, Scandinavian, German Literature (especially Nineteenth and Twentieth Century).
- Tate, George S. (1974) Ph.D., Cornell University, 1974.
Humanities, Comparative Literature, Medieval Studies (Scandinavian, German, English, Augustine, Twelfth-Century Renaissance).

Associate Professors

- Butler, Terrell M. (1979) Ph.D., Cornell University, 1979.
Humanities (especially Modernism, Intellectual History, Seventeenth-Century France).
- Green, Jon D. (1970) Ph.D., Syracuse University, 1972.
Humanities (especially Interrelations of the Arts, Modernism).
- Lounsbery, Richard C. (1982) Ph.D., University of Texas, Austin, 1979. Early Imperial Literature, Rhetoric, Classical Tradition in European and American Literature.
- Shumway, Larry V. (1975) Ph.D., University of Washington, 1974. Asian Humanities, Ethnomusicology.

Assistant Professors

- Blickman, Daniel R. (1982) Ph.D., Stanford University, 1983.
Greek Literature, History, and Philosophy.
- Hall, John F. (1978) Ph.D., University of Pennsylvania, 1981.
Roman History, Religion, and Law, Latin Literature.

Graduate Programs and Degrees

- Classics (M.A.)
- Comparative Literature (M.A., Ph.D. minor)
- Humanities (M.A.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments

CLASSICS

Classics is the study of Greek and Roman cultures—their languages, literature, history, art, and philosophy. The M.A. in Greek and Latin provides preparation for doctoral study in classics, philosophy, or religious studies, the M.A. in Latin teaching completes the training for teaching Latin in secondary schools. The classics program, in addition, has the responsibility for staffing and administering offerings in Greek and Roman history, which may be offered under classics, Greek, and Latin. Some of these courses are cross-listed with history, and several may count toward a history degree. Consult the History Department for details. A student may emphasize Greek and Roman history at the M.A. level in classics.

Areas of Specialization

Greek, Latin, Greek and Latin Teaching, Greek and Roman History.

PROGRAM AND DEGREE REQUIREMENTS

Classics (M.A.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Prerequisites:
 1. Baccalaureate degree in Greek or Latin.
 2. Reading knowledge of French, Italian, or German required for completion of program.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Clscs. 699R), but not including items II B and C described below.
- II. Required courses:
 - A. Greek or Latin 620R or 625R; Greek or Latin 640R or 650R; Clscs. 630R, 699R.

- B. Greek emphasis candidates: Latin through 301 or 302.
- C. Latin emphasis candidates: Greek through 301 or 302.
- D. Latin teaching emphasis candidates: Greek not required.
- E. Ancient history emphasis candidates: Greek and Latin through 302.

III. Thesis.

IV. Examinations.

- A. Written examination: Acceptable translation of and commentary on passages from Greek and/or Latin authors from required reading lists. (These lists, which are available from the department office, vary according to the emphasis area.)
- B. Oral defense of thesis and general oral examination on course work.

CLASSICS GRADUATE COURSES

630R. Topics in Greek and Roman History. (3)

Prerequisite: Greek 201 (Greek topics) or Latin 201 (Roman topics).

Topics vary (e.g., rise of the Greek city-state, Greek political thought, classical historiography, Rome and the Etruscans, imperial Rome).

690R. Seminar in Classics. (3)

Combined topics in Greek and Latin (e.g., comparative epic poetry, classical tradition of criticism, Euripides and Seneca).

699R. Master's Thesis. (1-9) F, W, Sp, Su

GREEK GRADUATE COURSES

511R. Topics in New Testament Greek. (3)

Prerequisite: Greek 311.

Readings from the Gospels, the Pauline or general epistles, or the Apocalypse.

530. Thucydides. (3)

550. Plato. (3)

Reading and analysis of Greek text of selected dialogues by Plato (e.g., *Republic*, *Meno*, *Protagoras*).

561. Attic Orators. (3)

590R. Directed Readings in Greek. (1-3) F, W, Sp, Su

Prerequisite: consent of graduate coordinator.

620R. Greek Poets. (3)

Intensive study of individual poets. Authors vary.

625R. Greek Prose Writers. (3)

Intensive study of individual prose authors. Authors vary.

640R. Studies in Genre. (3)

Various genres (e.g., epic, tragedy, historiography) and problems of genre. Topics vary.

650R. Period Studies. (3)

Topics vary (e.g., lyric age, fifth-century enlightenment, late antiquity).

690R. Seminar in Greek. (3)

Topics vary (e.g., Greek fathers, prose composition, epigraphy).

LATIN GRADUATE COURSES

521. **Romance Philology.** (3)
530. **Tacitus.** (3)
532. **Ovid.** (3)
538. **Roman Satire.** (3)
Selections from Horace, Petronius, and Juvenal.
- 581R. **Topics in Medieval Latin.** (3)
Study of particular periods (e.g., Carolingian renaissance, twelfth-century renaissance) or genres (e.g., historiography, epic, autobiography), or survey of medieval Latin. Topics vary.
- 590R. **Directed Readings.** (1–3) F, W, Sp, Su
Prerequisite: consent of graduate coordinator.
- 620R. **Latin Poets.** (3)
Intensive study of individual poets. Authors vary.
- 625R. **Latin Prose Writers.** (3)
Intensive study of individual prose writers. Authors vary.
- 640R. **Studies in Genre.** (3)
Various genres (e.g., epic, lyric, oratory) and problems of genre. Topics vary.
- 650R. **Period Studies.** (3)
Topics vary (e.g., late republic, Augustan age, Julio-Claudian age).
- 690R. **Seminar in Latin.** (3)
Topics vary (e.g., Latin fathers, prose composition, epigraphy).

COMPARATIVE LITERATURE

Comparative literature is the study of literature beyond the confines of any national tradition and the study of the relationships between literature and other areas of knowledge.

PROGRAM AND DEGREE REQUIREMENTS

Comparative Literature (M.A.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Prerequisites:
 1. Baccalaureate degree in literature.
 2. Thorough reading knowledge (300 level) of two of the three languages required for degree.

Requirements for Degree

- I. Credit hours (33): Minimum 27 course work hours plus 6 thesis hours (CLit. 699R).
- II. Required courses: CLit. 610, 6 hours of 620R (in two different periods), 6 hours from 630R, 640R, 650R, 660R, or 690R; and 699R.
- III. Electives: 12 hours of literature.
- IV. Language requirement: Thorough reading knowledge (300 level) of three languages, one of which must be German or French, and one of which may be English for students who choose to emphasize American or English literature.
- V. Thesis.
- VI. Examination: Final oral examination and defense of thesis.

Comparative Literature Ph.D. Minor

Requirements for degree minor:

- I. Thorough knowledge of three literary traditions, one of which must be French or German, in two periods each.
- II. All readings done in original language.
- III. Examinations: Written and oral examinations on areas of concentration. Students may be asked to demonstrate their facility with the languages relevant to their program during either or both of the examinations.

COMPARATIVE LITERATURE GRADUATE COURSES

- 590R. **Directed Readings.** (1–3) F, W, Sp, Su
Prerequisite: consent of graduate coordinator.
610. **Methods of Study in Comparative Literature.** (3) F
Introduction to critical study of literature: critical methods and bibliography, linguistic foundations of literature, textual scholarship, literary history, literary transmission, genre theory, literature and other disciplines, literary theory and criticism.
- 620R. **Studies in Periods and Movements.** (3) F, W
Prerequisite: prior or concurrent enrollment in CLit. 610.
Various literary periods, movements, etc., and problems of periodization. Topics vary.
- 630R. **Studies in Literary Genres.** (3)
Prerequisite: prior or concurrent enrollment in CLit. 610.
Various genres (e.g., novel, epic, tragedy, lyric) and problems of genre. Topics vary.
- 640R. **Studies in Themes and Types.** (3)
Prerequisite: prior or concurrent enrollment in CLit. 610.
Major literary themes (e.g., Faust, Don Juan, Ulysses, Arthur), types, motifs, and problems of literary typology. Topics vary.
- 650R. **Studies in Literary Relations.** (3)
Prerequisite: prior or concurrent enrollment in CLit. 610.
Interrelations of national literatures and figures and of literature with other areas of knowledge (art, history, law, psychology, music, etc.). Topics vary.
- 660R. **Studies in Literary Theory.** (3)
Prerequisite: prior or concurrent enrollment in CLit. 610.
Critical theories of literature and literary analysis. Topics vary.
- 670R. **Tutorial Internship.** (3)
Prerequisite: consent of graduate coordinator.
Individual research in cooperation with graduate faculty member, generally on problems relating to a specific national literature.
- 690R. **Seminar in Comparative Literature.** (3)
Prerequisite: CLit. 610.
Problems in comparative literature. Course content varies from semester to semester.
- 699R. **Master's Thesis.** (1–9) F, W, Sp, Su
Prerequisite: consent of graduate coordinator.

HUMANITIES

Widely used in the Renaissance, the term *humanities* (*humanitas* or *studia humanitatis*) refers to the study of human intellectual and artistic creativity. Humanities is both a general academic category (inclusive of literature, history, philosophy, and the history and criticism of art and music) and a discipline in its own right with a methodology for the critical study of intellectual history and aesthetics. Pursued as a major, the field offers students unusual latitude in developing a broad and full program in the liberal arts.

PROGRAM AND DEGREE REQUIREMENTS

Humanities (M.A.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Prerequisites:
 1. Baccalaureate degree in humanities, art history, history, literature, music, or philosophy.
 2. Completion of 400-level literature course in a foreign language.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Hum. 699R).
- II. Required courses: 6 hours each of 620R (in two different periods), 690R (on different topics), 699R.
- III. Electives: 12 hours in literature, art, music, history, or philosophy. To qualify, courses must approach these disciplines from theoretical, critical, or historical perspectives.
- IV. Thesis.
- V. Examination: Final oral examination that focuses on areas of concentration but also requires some general knowledge; thesis defense.

HUMANITIES GRADUATE COURSES

590R. Directed Readings. (1-3) F, W, Sp, Su
Prerequisite: consent of graduate coordinator.

620R. Period Studies in the Humanities. (3) F, W
Interdisciplinary study of literature, philosophy, and the arts of a particular period of cultural history. Topics vary.

690R. Seminar in the Humanities. (3) F, W
Interdisciplinary study of problems in the humanities (e.g., interrelationships among the arts, critical theory, and models of cultural history). Topics vary.

699R. Master's Thesis. (1-9) F, W, Sp, Su
Prerequisite: consent of graduate coordinator.

SCHOOL OF LIBRARY AND INFORMATION SCIENCES

Director: Nathan M. Smith, 5042 HBLL, 378-2977
Graduate Coordinator: Dorothy M. Shields, 5042 HBLL, 378-2976

Faculty/Specialties

Professors

Marchant, Maurice P. (1969) Ph.D., University of Michigan, Ann Arbor, 1970. Administration, Research Methods.
Smith, Nathan M. (1966) Ph.D., Brigham Young University, 1972. Interpersonal Relations, Reference, Research Methods.
Wright, H. Curtis (1969) Ph.D., Case Western Reserve University, 1969. Philosophy of Librarianship, Communication Theory.

Associate Professors

Shields, Dorothy M. (1974) Ed.D., Brigham Young University, 1977. Cataloguing, School Librarianship, Research.
Stirling, Keith H. (1972) Ph.D., University of California, Berkeley, 1977. Information Systems Design, Research Methods.

Assistant Professors

Broadway, Marsha D. (1985) Ph.D., Florida State University, 1985. Reference, Children's and Young Adult Literature.
Purdy, Victor William (1954) M.S., Columbia University, 1957. Selection, Acquisitions, Operations Research.

Graduate Program and Degree Library Science (MLIS)

The master of library and information science degree program, accredited by the American Library Association and accepted throughout the U.S. and Canada, prepares students to enter librarianship at the professional level. Completion of the program can lead to work in libraries, media centers, and information systems of many kinds.

The curriculum normally consists of 23 hours of required courses, which include the basic courses and completion of a research project or thesis, and 15 hours of elective course work through which students can specialize. With faculty approval, students may elect courses offered by departments outside the school.

The school offers a limited number of financial awards, and many students work part-time in the library.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Library Science (MLIS)

Admission and Entry

- I. Deadlines: University deadlines apply.
- II. Prerequisite: Baccalaureate degree in an academic program.

Requirements for Degree

- I. Credit hours (38): Minimum 38 course work hours (a minimum of one calendar year) including thesis or project.
- II. Required courses: LIS 513, 523, 527, 530, 536, 538, 596, and 696 or 697 or 699R.
- III. Electives: May be chosen from Library and Information Sciences offerings or, with approval of faculty advisor, from other departments on campus, depending on student's personal objectives.
- IV. Attendance at colloquia.
- V. A research project or thesis.
- VI. Examination: Oral defense of thesis.

Enriched MLIS Program

Students wishing to extend their library education beyond the regular MLIS degree may apply for acceptance into a 48-credit enriched program offering a certificate of completion.

Admission and Entry

- I. Current MLIS student status.
- II. GPA: 3.5 or above for a minimum of 15 credit hours in the MLIS program.
- III. Recommendation by faculty committee: To be recommended, students must be academically strong and highly motivated toward scholarly achievement and have displayed distinction in class performance.

Requirements for Certificate

- I. Credit hours (48): Minimum 48 course work hours.
- II. Completion of either LIS 671 or 672.
- III. Approved experiential learning determined in consultation with school director and faculty advisor.
- IV. Electives: Determined in consultation with faculty advisor.

Program and Degree Resources

Special awards and scholarships: S. R. and Anita Shapiro Award, Hattie M. Knight Award and Scholarship, Best Research Project Report Award, and Naoma Rich Earl Scholarship.

LIBRARY AND INFORMATION SCIENCES GRADUATE COURSES

513. Selection and Acquisition of Materials. (3)

Theoretical and practical aspects of collection development, including selection and acquisition of print and nonprint materials.

523. Reference Theory and Service. (3)

Reference theory, process, and services; basic reference sources; library users' needs and habits; information transfer models.

527. Basic Cataloguing and Classification. (3)

Survey course in cataloguing principles. Descriptive cataloguing, emphasizing AACR2 rules. Introduction to Dewey Decimal Classification, Sears Subject Headings, and OCLC search keys.

530. Philosophical Bases of Librarianship. (2)

Epistemological, historical, professional, and philosophical bases of library and information sciences.

536. Library Organization and Administration. (3)

Organizational and administrative theory and problems associated with personnel, authority, policy, planning, reports, standards, etc.

538. Documentation and Information Retrieval. (3)

Design and evaluation of automated literature-searching systems. Recent developments in on-line bibliographic retrieval. Developing and using search strategies on commercial on-line data bases.

540. Communication and Information Use Among Scholars and Scientists. (3)

Comparing subject characteristics, research methods, information needs and uses, and communication systems in natural science, social science, and humanistic disciplines.

549. Literature of Mormonism. (3)

Church's communication structure, serial publications, reference sources. Individualized study of factual/creative works in print/nonprint formats ranging over all aspects of Mormonism.

557. The Library Media Center in the School. (3)

Problem-oriented approach examining role of librarian/media specialist in public education. Budget preparation, policy writing, and various individualized problems.

558. Library Services for Children and Young Adults. (3)

Programs and services designed to meet needs of individuals and groups of young people. Current issues. Public library emphasis.

565. Information Systems Analysis and Library Automation. (3)

Systems analysis and data processing techniques applied to library technical processing. Design specifications for user-friendly systems. Project required.

571. Archives and Manuscripts. (3)

Introduction to archival history and theory in Western civilization, emphasizing U.S. archival practices, including appraisal, acquisitions, preservation, processing, dissemination, and research use.

580R. Workshop: Current and Special Problems. (1-2)**582. Librarian Interpersonal Relations. (3)**

Models by Adler, Rogers, Ellis, and Berne related to librarian interaction with patrons, administrators, library boards, and others. Assertiveness training. Conflict resolution.

594R. Special Topics in Library Science. (1-3)

Topics vary.

596. Evaluating and Using Library Research. (3) F, W, Su

Problem identification, applicable social science research methods, and basic statistical interpretations. Writing a research proposal. Interpreting and critiquing library-related research.

599R. Cooperative Education in Librarianship. (Arr.) F, W
Prerequisite: consent of instructor.

Practical on-the-job experience and training in library and information services. Practicum; internship. Report required.

623. Advanced Reference Services and Resources. (3)

Prerequisite: LIS 523.

Managing and evaluating reference staff and resources, planning and implementing library use instruction, and investigating reference sources in a subject area.

624. Government Publications. (3)

Intensive study of documents published by federal, state, and local governments and the U.N., emphasizing selection, organization, and use in different types of libraries.

627. Advanced Cataloguing and Classification. (3)

Prerequisite: LIS 527.

Problems in descriptive cataloguing and subject headings.

*Library of Congress classification emphasized. Comparison to Dewey included. Shared cataloguing (RLIN). Machine-readable cataloguing (MARC).

629. Classification Theory. (2)

Philosophical and theoretical bases of classification and cataloguing.

630. Philosophical Orientation to the Western Humanities Tradition. (2)

Traces cultural tension between Greco-Roman naturalism and Judeo-Christian supernaturalism through main watersheds of Western thought. Follows its expression in art, literature, and philosophy.

631. History and Theory of Manuscription. (2)

Development of written communications and librarianship in the ancient world.

632. History and Theory of Printing. (2)

Development of printed communications and librarianship in the modern world.

638. Advanced Information Science. (3)

Prerequisite: LIS 538.

Formal methods of intellectual access to documents. Content analysis of on-line data bases. Bibliographic forms for transmitting meaning. Search strategies.

671. The Public Library in Society. (3)

Prerequisite: LIS 536.

History, purposes, and functions of American public libraries. Standards, guidelines, community analysis, budgeting, and evaluation.

672. Libraries in Higher Education. (3)

Prerequisite: LIS 536.

History, roles, and functions of the library as a component of institutions of higher learning. Standards, guidelines, budgeting, and evaluation.

694R. Independent Research. (1-2) F, W, Sp, Su

696. Library Operations Research. (3) F, W, Su

Prerequisite: LIS 596.

Participation in operations or other types of research individually or as team member in area of instructor's specialization. Analyzing and presenting results for peer critique.

697. Research Project Seminar. (3) F, W

Prerequisite: LIS 596.

Researching library-related problems and presenting results at each stage. Critiquing all other students' papers; investigating research approaches and interpretations. Option to write in publication format.

699R. Master's Thesis. (1-6) F, W, Sp, Su

Prerequisite: LIS 596 or consent of instructor.

DEPARTMENT OF LINGUISTICS AND ESL

Chairman: Harold S. Madsen, 2129 JKHB, 378-2937

Graduate Coordinator: Charles Ray Graham, 3187 JKHB, 378-2208

Faculty/Specialties

Professors

Blair, Robert W. (1959) Ph.D., Indiana University, Bloomington, 1964. SLA, Sociolinguistics and Methodology, Materials Development.

Luthy, Melvin J. (1971) Ph.D., Indiana University, Bloomington, 1967. Phonology, Snyntax, Finnish Studies.

Madsen, Harold S. (1956) Ph.D., University of Colorado, Boulder, 1965. Testing, Research Design, Statistics, ESL.

Otto, Frank R. (1975) Ph.D., University of Wisconsin, Madison, 1966. CAL, Materials Development, Program Supervision, ESL.

Associate Professors

Graham, Charles Ray (1980) Ph.D., University of Texas, Austin, 1977. SLA/Attrition, ESL, Spanish.

Melby, Alan K. (1977) Ph.D., Brigham Young University, 1976. Computer Aids for Translators, Syntax, French.

Robertson, John S. (1977) Ph.D., Harvard University, 1976. Mayan Linguistics, Semiotics, Semantics, Comparative Historical Linguistics.

Assistant Professors

Brown, Cheryl (1975) Ph.D., University of California, Los Angeles, 1983. SLA, Discourse, Methodology, Research Design, ESL.

Shelley, Monte F. (1976) Ph.D., University of California, Los Angeles, 1983. Text Retrieval and Analysis, Instructional Science and Instructional Evaluation.

The following are linguists in other departments who frequently teach linguistics courses in their own departments or in the Department of Linguistics and who also serve on graduate and other committees for the Linguistics Department.

Brown, Bruce L. (Linguistics and Psychology)

Bush, Charles (Computer Applications)

Chi, T. Richard (Chinese)

Clegg, J. Halvor (Spanish)

Cox, Soren F. (English)

Fauls, Willis C. (Spanish)

Folsom, Marvin H. (German)

Hart, David K. (Russian)

Jones, Randall L. (German)

Parkinson, Dilworth B., (Arabic)

Russell, Robert A. (Japanese and Arabic)

Skousen, Royal (English)

Smith, Kim (Computer Applications)

Watabe, Masakazu (Japanese)

The Linguistics Department is responsible for the following academic programs:

Linguistics

Teaching English as a Second Language

American Indian Languages

Central and South American Indian Languages

Austronesian Languages

Welsh

American Sign Language

Graduate Programs and Degrees

Linguistics (M.A.)

TESL Certificate

TESL (M.A.)

Areas of Specialization

Language acquisition, computer applications, applied linguistics, and TESL.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS**Linguistics (M.A.)****Admission and Entry**

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. International applicants: Departmental English Proficiency Exam.
- II. Prerequisites:
 - A. 6 hours in upper-division linguistics.
 - B. High-level competency (321 level or higher) in one foreign language.
- III. Entry time: Fall semester recommended.

Requirements for Degree

- I. Credit hours (32): Minimum 26 course work hours plus 6 thesis hours (Ling. 699R).
- II. Required courses: Ling. 450, 520, 521, 550, 630, 690, 699R.
- III. Electives: 9 approved hours.
- IV. Thesis.
- V. Examinations (consult department for details):
 - A. Written comprehensive examination (on completion of course work).
 - B. Oral defense of thesis.

TESL Graduate Certificate

BYU's TESL certificate (not to be confused with state teacher certification) is designed to prepare teachers for overseas English programs as well as for stateside English assignments teaching foreign students.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examinations for nonnative speakers of English: TOEFL, minimum score 550; Departmental English Proficiency Exam. Any deficiencies in English skills must be remedied to the satisfaction of the department before moving into the TESL program.
- II. Prerequisites:
 - A. Intermediate-level proficiency in a modern foreign language. (Language courses may be taken concurrently with ESL graduate courses.)
 - B. Ling. 330 or Engl. 328.
- III. Entry time: Fall semester recommended.

Requirements for Certificate

- I. Credit hours (18): Minimum 18 course work hours.
- II. Required courses:
 - A. Ling. 525, 531, 540, 555 or 572, 577, 579.
 - B. ESL 404 (3 hours) is required of all nonnative English speakers who desire to teach English as a second language.
 - C. For those planning to enter the TESL M.A. program: A satisfactory score on a written comprehensive examination; Ling. 500.

Although the graduate TESL program has been accepted by the Utah Board of Education as an accredited teaching major for secondary education students, those who have completed student teaching in an area other than ESL are still required to complete 2 hours of student teaching in English as Second Language (Ling. 579).

TESL (M.A.)**Admission and Entry**

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: Qualifying comprehensive.
 - C. Applicants must petition department and be accepted by review board. Students should not register for 600-level course work until notified of acceptance into the M.A. program.
- II. Prerequisites:
 - A. Completion of graduate TESL Certificate.
 - B. Ling. 500.
 - C. Submission of preliminary proposal for thesis topic, including: a written review of literature, a detailed statement of rationale and objectives, a statement of research question(s).
- III. Entry time: Fall semester.

Requirements for Degree

- I. Credit hours (37): Minimum 31 hours (including 18 hours from TESL Certificate) plus 6 thesis hours (Ling. 699R).
- II. Concentration in one of four areas; required courses:
 - A. Teaching: Ling. 600, 660, 677, 695; Engl. 529 or Ling. 430.
 - B. Administration: Ling. 599R, 600, 671, 677, 678, 695.
 - C. Materials Development: Ling. 600, 660, 678, 695; IS 583.
 - D. Language Acquisition: Ling. 600, 641, 660, 677, 695.
- III. Thesis.
- IV. Examination: Final oral examination and defense of thesis.

LINGUISTICS GRADUATE COURSES**500. Bibliography and Research. (1) F, W**

Procedures for developing research projects and reporting on their results; priority given to major papers and M.A. thesis projects.

520. Phonetics. (3) F

Prerequisite: Ling. 330.

General inventory of speech sounds possible in language, from both an acoustic and articulatory point of view.

521. Phonology. (3) W

Prerequisite: Ling. 330.

Discriminative values of speech sounds: their function in the communicative process. Analysis of phonological data via postulation of underlying forms and derivational rules.

525. Phonology of Modern English. (3) F, W

Prerequisite: Engl. 328 or Ling. 330 or equivalent.

Articulatory phonetics (phonemics), intonation, and contrastive analysis of English sounds with those of other languages. Strong practicum included.

531. Grammar Usage. (3) F, W

Examining English grammar and usage as they reflect different theories about language description and applying this knowledge in the ESL classroom.

535. Semantics. (3) W

Prerequisite: Ling. 330.

Theory and practice of semantic analysis with special emphasis on Jakobsonian and Peircian semiotics.

540. Language Acquisition. (3) F, W

Prerequisite: Ling. 330 or equivalent.

First and second-language acquisition viewed in light of psycholinguistics and sociolinguistics.

550. Sociolinguistics. (3) W

Research and theory in anthropological linguistics and sociolinguistics.

551. Anthropological Linguistics. (3) F

Language in culture and society: development, typology, and description.

555. Teaching Culture. (3) F

Experience developing materials and activities dealing with typical patterns of U.S. life-style. Variety of readings.

571. English as a Second Language in the Elementary School. (3) On dem.

Nature of language acquisition and strategies and materials designed to facilitate second language learning in the primary grades.

572. TESL Reading-Writing. (3) W

Basic techniques for teaching ESL skills in reading and writing; applying these skills in the classroom.

573. TESL Literature. (3) W on dem.

Teaching literature to nonnative English speakers, both TEFL and TESL.

577. Introduction to ESL Methodology. (4) F, W

Prerequisite: ESL 404 or native English speaker.

Instruction in basic second language methodology, ESL teaching techniques, and materials selection. Actual ESL class observation and practice.

579. TESL Student Teaching. (2) F, W, Sp, Su

Prerequisite: Ling. 525, 531, 577, and advance departmental approval.

580R. Problems in Linguistics and Applied Linguistics. (1-3V) On dem.

Advanced research in language acquisition, sociolinguistics, psycholinguistics, linguistics field study, applied linguistics.

590R. Readings in Linguistics. (1-3) F, W

Prerequisite: consent of instructor.

Individual study of current linguistic literature. Occasional discussion sessions with instructor and other class members. Pass-fail grade only.

599R. Cooperative Education. (1-9) On dem.

On-the-job experience under faculty supervision.

600. Research Design and Bibliography. (3) F

Prerequisite: Ling. 500.

Analysis of the options in research design for examining language teaching and acquisition; basic statistics; use of computers in language research.

630. Syntactic Theory. (3) W

Prerequisite: Ling. 430 or equivalent.

Theory of transformational grammar, emphasizing its history and recent extensions.

641. Interlanguage Analysis. (3) W

Prerequisite: Ling. 330 or equivalent.

Language as it relates to language acquisition and teaching, including contrastive analysis, error analysis, and discourse analysis.

660. Language Testing. (3) F

Construction, analysis, use, and interpretation of language tests.

671. TESL Supervision-Administration. (2) F

Prerequisite: Ling. 579 or equivalent.

Ministerial language policies, teacher selection and preparation, program development and direction.

677. Advanced Methodology. (3) W

Prerequisite: Ling. 577 or equivalent.

Advanced ESL methodology and its classroom application.

678. Materials Development. (3) W

Prerequisite: Ling. 577.

Computer-assisted language materials development; evaluating and adapting texts, exercises, games, and supplementary teaching aids; developing tapes.

679. TESL Supervision-Administration Internship. (2) W

Prerequisite: Ling. 671 or consent of instructor.

Actual fieldwork in TESL settings involving supervision, in-service training, and curricula-program study and administration.

690. Seminar in Linguistics. (2) W

Prerequisite: Ling. 528.

Advanced research and analysis of various linguistic problems.

695. TESL Seminar. (1) W

Prerequisite: completion of majority of ESL courses; consent of instructor.

Integrating TESL theory and practice; refining thesis and publicly presenting and defending preliminary thesis.

699R. Master's Thesis. (1-9) F, W, Sp, Su

DEPARTMENT OF PHILOSOPHY

Chairman: Dennis Jay Packard, 3196 JKHB, 378-6516

The Department of Philosophy offers a graduate minor but not a major. See the BYU General Catalogue for faculty listings.

Graduate Program

Philosophy Minor

Philosophy students study significant texts and analyze issues in diverse disciplines and in doing so gain basic habits of mind needed for mature and responsible judgment.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM REQUIREMENTS

Philosophy Minor

- I. Master's level: An approved 9 hours.
- II. Doctoral level: An approved 15 hours.
- III. Students should direct inquiries about courses and advisory committee members to the department chairman.

PHILOSOPHY GRADUATE COURSES

501R. Graduate Seminar. (2–5) F, W, Sp, Su

Prerequisite: consent of instructor.

Selected topic, figure, or movement in philosophy, as announced in Class Schedule.

DEPARTMENT OF SPANISH AND PORTUGUESE

Chairman: Thomas E. (Ted) Lyon, 4048 JKHB, 378-2837

Graduate Coordinator: Russell M. Cluff, 4048-A JKHB, 378-7019

Faculty/Specialties**Professors**

Compton, Merlin D. (1964) Ph.D., University of California, Los Angeles, 1959. Spanish-American Literature.

Forster, Merlin H. (1987) Ph.D., University of Illinois, 1960. Spanish-American Literature.

Lyon, Thomas E. (Ted) (1972) Ph.D., University of California, Los Angeles, 1967. Spanish-American Literature.

Moon, H. Kay (1963) Ph.D., Syracuse University, 1963. Spanish Literature.

Quackenbush, L. Howard (1970) Ph.D., University of Illinois, Urbana, 1970. Spanish-American Literature.

Associate Professors

Clegg, J. Halvor (1972) Ph.D., University of Texas, Austin, 1969. Phonology, Spanish Language, Linguistics.

Cluff, Russell M. (1983) Ph.D., University of Illinois, Urbana, 1978. Spanish-American Literature.

Larson, Jerry W. (1980) Ph.D., University of Minnesota, Minneapolis, 1977. Spanish Language Acquisition, Methodology, Media Specialist, Language Laboratories.

Assistant Professors

Fails, Willis C. (1981) Ph.D., University of Texas, 1984. Spanish and Portuguese Linguistics.

Meredith, Robert Alan (1977) Ph.D., Ohio State University, Columbus, 1976. Spanish Language, Teaching Methodology.

Rosenberg, John R. (1985) Ph.D., Cornell University, 1985. Contemporary Peninsular Literature.

Visiting Professor

Rojas, Gonzalo (1985) Licenciatura, Universidad de Chile, 1942. Spanish-American Literature, Poet in Residence.

Graduate Programs and Degrees

Language Acquisition (Spanish and Portuguese) (M.A.)

Portuguese Language (M.A.)

Portuguese Literature (M.A.)

Spanish Language (M.A.)

Spanish Literature (M.A.)

Spanish Teaching (M.A.)

Note: The Spanish and Portuguese Department does not offer a graduate degree program in translation.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Language Acquisition (Spanish and Portuguese) (M.A.)

See description of program in preceding Collegewide Graduate Program in Language Acquisition section.

Portuguese Language (M.A.)

Portuguese Literature (M.A.)

Admission and Entry

I. Deadlines: University deadlines apply.

II. Prerequisites:

A. Baccalaureate degree in Portuguese or equivalent.

B. Reading knowledge of at least one other foreign language.

Requirements for Degree

I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (699R).

II. Thesis.

III. Examination: Oral defense of thesis.

Spanish Language (M.A.)

Spanish Literature (M.A.)

Spanish Teaching (M.A.)

Admission and Entry

I. Deadlines: University deadlines apply.

II. Prerequisites:

A. Baccalaureate degree in Spanish or equivalent.

B. Reading knowledge of at least one other foreign language.

III. Entrance examination: Applicants may be required to have an oral interview or produce a tape to demonstrate language proficiency.

Requirements for Degree

I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (699R).

II. Required courses: Span. 601, 699R; three courses outside specialization (at least one from each of the other two areas of specialization).

III. Three options—thesis, two- paper option, or project written in MLA style.

IV. Examinations: Comprehensive written examination as well as a comprehensive oral examination over course work, a reading list, and the student's writing project.

SPANISH AND PORTUGUESE**GRADUATE COURSES****PORTUGUESE GRADUATE COURSES**

520R. Portuguese Composition. (3)

521. Romance Philology. (3)

522. History of the Portuguese Language. (2)

552. Machado de Assis. (2)

Prerequisite: Port. 441, 451, or equivalent.

553. Twentieth-Century Brazilian Literature. (3)

Prerequisite: Port. 441, 451, or equivalent.

641R. Portuguese Literature. (3)

651R. Brazilian Literature. (3)

670R. Tutorial Internship in Portuguese. (3) F, W, Sp, Su
Individual research in cooperation with graduate faculty member in problems relating to Portuguese literature and language. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.

680R. Special Studies in Portuguese. (1–3) F, W, Sp, Su
Individual study supervised by graduate faculty member in varying topics of specific interest in Portuguese literature and language.

690R. Seminar in Portuguese. (3) F, W, Sp, Su
Group studies supervised by graduate faculty member in varying topics of specific interest in Portuguese literature and language.

699R. Master's Thesis. (1–9) F, W, Sp, Su

SPANISH GRADUATE COURSES

520. Advanced Spanish Grammar. (2)
Application of contemporary grammatical concepts to problems in Spanish grammar.

521. Romance Philology. (3)
Comparative study of the evolution of Latin into the modern Romance languages. Cross-listed with Latin 621 and Port. 521

522. History of the Spanish Language. (3)
Linguistic sources that contributed to the formation of the Spanish language.

577. Spanish Language Teaching Procedures. (3) Su
Mastery of teaching skills specific to foreign language instruction. Lectures, demonstrations, practical experience. Designed for public school teachers.

601. Bibliography and Research Techniques. (2)
Core course for all M.A. candidates.

625. Spanish Morphosyntax. (3)
Linguistic study of morphological and syntactic structure of Spanish.

626. Spanish Phonetics and Phonology. (3)
Prerequisite: Span. 326 or consent of instructor.
Systematic study of articulatory and acoustic Spanish phonetics and of structural and generative approaches to phonological description of Spanish.

629R. Seminar in Spanish Linguistics. (2)

640. Medieval Spanish Literature. (3)

642R. Special Topics in Peninsular Literature. (3)

643R. Golden Age Literature. (3)

644. Don Quijote. (3)
An in-depth study of Cervantes' *Don Quijote de la Mancha*.

646R. Nineteenth-Century Spanish Literature. (3)

648R. Twentieth-Century Spanish Literature. (3)

650. Spanish American Poetry. (3)

652R. Special Topics in Spanish American Literature. (3)

654R. The Spanish American Novel. (3)

656. Latin American Drama. (3)

658R. Hispanic American Short Story. (3)

670R. Tutorial Internship in Spanish. (3) F, W, Sp, Su
Individual research in cooperation with graduate faculty member in problems relating to Spanish literature and language. Tutorial work in writing research papers. Topics vary according to interests and expertise of faculty supervisor.

671. Principles of Foreign Language Learning and Teaching. (3)
Core course work for all M.A. candidates. Basic theories and principles of language learning and teaching. History, current research, practices, trends, and issues.

672. Media and Technology in Foreign Language Instruction. (3)
Applying modern technology and instructional media in teaching foreign languages.

673R. Directed Teaching of Spanish. (1–3)
Prerequisite: Span. 326, 377, and graduate assistantship in department.
Supervised, practical experience in teaching Spanish at the college level

674. Teaching Hispanic Culture. (3)
Methods of researching and teaching Hispanic culture.

676. Principles of Testing Foreign Language Skills. (3)
Test development and analysis for assessment of the four skills plus grammar and culture, survey and questionnaire construction.

678. Research Design in Foreign Language Instruction. (3)
Designing and evaluating empirical research studies in foreign language learning and teaching methodology

679R. Seminar in Teaching Spanish. (3)
For experienced language teachers.

680R. Special Studies in Spanish. (1–3) F, W, Sp, Su
Individual study supervised by graduate faculty member in varying topics of specific interest in Spanish literature and language

690R. Seminar in Spanish. (3) F, W, Sp, Su
Group studies supervised by graduate faculty member in varying topics of specific interest in Spanish literature and language.

698R. Master's Project. (1–6) F, W, Sp, Su
Prerequisite: consent of advisory chairman.
Candidates in the nonthesis program may complete an approved field project as their writing/research experience.

699R. Master's Thesis. (1–9) F, W, Sp, Su

L A W S C H O O L

Dean: Bruce C. Hafen, 348-A JRCB, 378-4276

Associate Deans: J. Clifton Fleming, Jr., 510 JRCB, 378-2485

H. Reese Hansen, 342 JRCB, 378-6385

Assistant Dean: Claude E. Zobell, Jr., 338 JRCB, 378-6386

Faculty/Specialties

Professors

Backman, James H. (1973) J.D., University of Utah, 1972.

Banking Law, Consumer Law, Land Use Planning, Real Estate Transactions, Real Property.

Davis, Ray Jay (1981) J.D., Harvard University, 1953. Torts, Water Rights, Workers' Compensation.

Durham, W. Cole, Jr. (1976) J.D., Harvard University, 1975. Comparative Law, Constitutional Law, Criminal Law, Jurisprudence.

Farmer, Larry C. (1977) Ph.D., Brigham Young University, 1975. Computer-based Expert Systems in Law Practice, Law and Behavioral Science, Law and Psychiatry, Legal Interviewing and Counseling, Negotiation.

Fleming, J. Clifton, Jr. (1974) J.D., George Washington University, 1967. Business Planning, Corporate Finance, Estate Planning, Federal Taxation.

Floyd, C. Douglas (1980) LL.B., Stanford University, 1967. Administrative Law, Antitrust, Civil Procedure.

Goldsmith, Michael (1985) J.D., Cornell University, 1975. Criminal Law, Criminal Procedure, Evidence, RICO.

Gordon, James D., III (1984) J.D., University of California, Berkeley, 1980. Contracts, Legal Writing, Securities.

Hafen, Bruce C. (1971) J.D., University of Utah, 1967. Constitutional Law, Education Law, Family Law.

Hansen, H. Reese (1973) J.D., University of Utah, 1972. Civil Procedure, Commercial Law, Contracts, Introduction to Law, Wills and Estates.

Hawkins, Carl S. (1973) J.D., Northwestern University, 1951. Civil Procedure, Federal Jurisdiction, Torts.

Jacobs, Eugene B. (1980) J.D., University of California, Berkeley, 1951. Land Use Planning, Real Estate Transaction, Public Finance, Real Estate Finance, State and Local Government.

Kimball, Edward L. (1973) SJD, University of Pennsylvania, 1962. Evidence, Criminal Justice Administration, Criminal Law, Criminal Trial Practice.

Lee, Rex E. (1971) J.D., University of Chicago, 1963. Antitrust, Appellate Advocacy, Constitutional Law.

Lundberg, Constance K. (1982) J.D., University of Utah, 1972. Civil Rights, Clinical Teaching, Environmental Law, Federal Courts, Natural Resources, Interviewing and Counseling.

Neeleman, Stanley D. (1978) J.D., University of Denver, 1972. Estate Planning, Federal Taxation.

Parker, Douglas H. (1975) J.D., University of Utah, 1952. Federal Indian Law, Jewish Law, Indian Law, Roman Law, Professional Responsibility.

Riggs, Robert E. (1975) LL.B., University of Arizona, 1963. Constitutional Law, International Law, International Organizations.

Sabine, James E. (1976) J.D., University of California, Berkeley, 1937. Community Property, Legislation, Local Government, State and Local Taxation, Trial and Appellate Advocacy.

Thomas, David A. (1974) J.D., Duke University, 1972. Federal Jurisdiction, Legal Bibliography, Legal History, Legal Research and Writing, Real Property.

Wardle, Lynn D. (1978) J.D., Duke University, 1974. Biomedical Ethics and Law, Civil Procedure, Conflict of Laws, Family Law, Legal Research and Writing.

Welch, John W. (1980) J.D., Duke University, 1975. Agency and Partnerships, Corporate Finance, Corporations, Federal Taxation.

Williams, Gerald R. (1973) J.D., University of Utah, 1969. Contracts, Insurance, Law and Society, Office Practice, Remedies, Legal Negotiation and Settlement.

Wood, Mary Anne Q. (1976) J.D., George Washington University, 1976. Contracts, Debtor/Creditor Rights, Government Contracts, Labor Law, National Security, Remedies.

Wood, Stephen G. (1976) J.D., University of Utah, 1969; JSD, Columbia University, 1980. Administrative Law, Civil Rights, Comparative Law, International Transactions, Labor Law.

Associate Professors

Burns, Jean Wegman (1986) J.D., University of Chicago, 1973. Commercial Law, Conflicts of Laws.

Wilkins, Richard G. (1984) J.D., Brigham Young University, 1979. Antitrust, Civil Procedure, Legal Writing.

Assistant Professor

Worthen, Kevin J. (1987) J.D., Brigham Young University, 1982. Torts, Environmental Law.

The J. Reuben Clark Law School offers a six-semester course of graduate professional study leading to the juris doctor (J.D.) degree. Information about legal education, admissions standards and procedures, and related matters can be obtained from the J. Reuben Clark Law School Bulletin, which is available through the admissions office of the Law School.

Students admitted to the highly competitive programs of the Law School receive a breadth and depth of training that prepares them to function in the wide range of activities that occupy the

professional lawyer's life. Students gain firsthand experience with a variety of teaching and learning methods, among them Socratic or inductive teaching, problem solving, seminars, individual research, and clinical experience.

To be admitted to the Law School, an applicant must be a college graduate who has excelled academically and has scored in the upper range of the nationally administered Law School Admission Test. In addition, applicants must meet the general university admission requirements, including the personal standards required of all students.

The Law School selects approximately 150 students each year for admission to the new class. Admissions are for fall semester only.

Application deadline: March 1, 1988.

By the posted deadline, all parts of the completed application must have been received in the Graduate Admissions Office, B-356 ASB. To be considered complete, the application must include the following:

- A completed application on the official Law School application form.
- A check or money order for \$30 payable to Brigham Young University. This is nonrefundable and is not credited toward tuition.
- Three completed evaluations from undergraduate teachers on Prospective Law Student Evaluation Forms included in the official application.
- The report of the applicant's interview with his or her bishop, clergy, or judge of a court of general jurisdiction indicating the applicant's willingness to comply with the BYU Code of Honor and standards of conduct.

For additional information about admissions requirements, criteria, notification, and procedures, including the LSAT and registration with the Law School Data Assembly Service (LSDA), see the Law School Bulletin.

In addition to the juris doctor degree, the university has approved programs whereby qualified students can obtain a concurrent master's degree in business administration, public administration, accounting, or organizational behavior while pursuing a law degree. These are four-year programs.

Tuition, Fees, and Financial Aid

Tuition and fees must be paid prior to or at the time of registration. Since more than 50 percent of the cost of operating the Law School comes from the tithes of The Church of Jesus Christ of Latter-day Saints, students and the families of students who are tithe-paying members have already made a significant contribution to the university and are thus charged a lower tuition fee than nonmembers. This disparity is similar to the higher tuition charged by law schools of state universities to nonresidents.

Semester tuition:	\$1,610	members
	\$2,415	nonmembers
Fewer than 9 hours	\$178	per hour, members
	\$267	per hour, nonmembers

A number of scholarships and endowed awards are available to law students, as well as a variety of low-interest loans. Students interested in these opportunities should inquire at the Law School and the university's Financial Aid Office.

SPECIAL FACILITIES

J. Reuben Clark Law Building

One of the finest university law school facilities in the country, the J. Reuben Clark Law Building is attractively located on the eastern edge of the campus. It houses on its five floors nine classrooms, three seminar rooms, a student commons area, a student lunchroom, and ample spaces for student organizations and activities as well as faculty offices and a law library.

Law Library

Ranking now among the nation's larger law libraries, BYU's law library contains more than 300,000 volumes or equivalents available for student and faculty use. Offering the latest in technological facilities and services, the library also contains 450 individual study carrels which provide privacy and quiet for each law student. Law students also have access to the holdings in the central university library, the Harold B. Lee Library.

Special Programs and Activities

Cocurricular Program. In addition to the *Brigham Young University Law Review*, law students publish the *Journal of Public Law* and participate in a Board of Advocates program. The cocurricular program extends law review experience to a larger number of students than would be possible through a single journal.

Other Special Programs. Opportunities include training in the practical and legal skills of labor relations through the Glen L. Farr Endowment. Students also require experience in trial and appellate practice that is patterned after the old English Inns through the American Inn of Court I. Minority students may participate in annual summer institutes sponsored by the Council on Legal Education Opportunity and a scholarship program in law for American Indians funded by the Bureau of Indian Affairs.

Student Organizations. Within the Law School, students may participate in a number of organizations, among them the Student Bar Association, the Associated Women Law Students, the Family Law Society, the Government and Politics Legal Society, the International and Comparative Law Society, the Minority Law Students Association, and the Natural Resources Law Forum. There are also chapters of three national legal fraternities on campus and a Law Partners organization for spouses of married law students.

LAW COURSES

See the Law School Bulletin for course descriptions.

- 505 and 506. Torts 1 and 2. (3 ea.)
- 510 and 511. Contracts 1 and 2. (3 ea.)
- 515 and 516. Civil Procedure 1 and 2. (3 ea.)
- 520 and 521. Property 1 and 2. (3 ea.)
- 525. Criminal Law. (3)
- 535 and 536. Legal Research and Writing 1 and 2. (1.5 ea.)
- 601. Accounting for Lawyers. (3)
- 602. Administrative Law. (3)
- 603. Criminal Procedure. (3)
- 604. Advanced Legal Writing. (2)

- 605. Antitrust. (3)
- 606. Anglo-American Legal History. (2)
- 607. Biblical Law. (2)
- 608. Banking Law. (2)
- 610. Business Associations. (4)
- 611. Advising Closely Held Businesses. (2)
- 614. Combining and Reorganizing Corporate Businesses. (2)
- 615. Commercial Law 1. (3)
- 616. Commercial Law 2. (3)
- 617. Comparative Law. (3)
- 618. Community Property. (2)
- 619. Conflict of Laws. (2)
- 620. Constitutional Law 1. (3)
- 621. Constitutional Law 2. (3)
- 622. Civil Appellate Advocacy and Practice. (2)
- 623. Debtors' and Creditors' Rights. (4)
- 624. Environmental Law. (3)
- 625. Evidence. (4)
- 627. Consumer Protection. (3)
- 628. Equitable Remedies. (3)
- 631. Tax Planning for Individuals. (3)
- 632. Family Law. (3)
- 633. Advanced Family Law. (2)
- 634. Law and Economics. (3)
- 635. Federal Courts. (3)
- 636. Government Contracts. (3)
- 638. Introduction to Contemporary Legal Theory. (3)
- 639. International Business Transactions. (3)
- 640. Federal Taxation 1. (4)
- 641. Federal Taxation 2. (4)
- 642. Intellectual Property Law. (2)
- 644. Insurance Law. (3)
- 645. Federal Indian Law. (3)
- 646. Jurisprudence. (3)
- 647. International Organizations. (3)
- 648. Workers' Compensation. (2)
- 650. Real Estate Finance. (3)
- 652. Legislation. (2)
- 654. Legal History and Legal Thought. (3)
- 655. Labor Law. (3)
- 656. Public Land and Natural Resources. (3)
- 657. Fair Employment Practices and Standards. (3)
- 658. Land Use Planning. (3)
- 659. Public International Law. (3)
- 660. Professional Responsibility. (2)
- 662. Securities. (3)
- 663. State and Local Government 1. (3)
- 664. Taxation of Natural Resources. (3)
- 665. Trusts. (2)
- 666. Wills and Estates. (4)
- 667. Roman Law. (2)
- 668. Legal Negotiation and Settlement. (3)
- 669. Public Employment Labor Relations. (2)
- 670. Advanced Real Estate Transactions. (2)
- 672. Securities Litigation. (2)
- 673. Minerals Development Law. (3)
- 674. Law Office Management. (2)
- 675. Advanced Torts. (2)
- 676. Personal Property Security. (3)
- 677. Regulated Industries. (3)
- 678. Sex Discrimination and the Law. (2)
- 680. State and Local Government 2. (3)
- 681. Tax Procedure. (2)
- 682. Trade Regulation. (2)
- 683. Jewish Law. (2)
- 684. Water Law. (3)
- 686R. Special Topics in Law. (2 ea.)
- 687R. Special Topics in Law. (2 ea.)
- 690R. Directed Research. (1–2 ea.)
- 691R. Directed Readings. (1–2 ea.)
- 692R. Cocurricular Programs. (1 ea.)
- 693R. Third-Year Cocurricular Writing (2 ea.)
- 695R. Law School Seminars. (Arr.)
- 696R. Law School Seminars. (Arr.)



COLLEGE OF NURSING

Dean: June Leifson, 592 SKWT, 378-4144

Associate Dean, Graduate Studies: Marilyn Lyons,
580 SWKT, 378-7193

The primary purpose of the graduate program in nursing is to prepare practitioners and specialists with additional knowledge and skills in research, education, consultation, and administration.

RESEARCH SUPPORT FACILITIES

Physiology Laboratory

Director: Camilla Wood (486 SWKT)

Students and faculty participate in a variety of research projects in the well-equipped Physiology Laboratory. Currently researchers are examining a variety of immunologic tests through electrophoresis and diffusion techniques; analyzing mothers' milk for amino acid, carbohydrate, and energy content; and examining glycosylated hemoglobin in diabetic subjects with a spectrophotometer. Also, special rooms are equipped for doing psychosocial research and conducting EKG and physiological examinations.

Nursing Clinic

This clinic is an important component of the Comprehensive Clinic described earlier in connection with the College of Family, Home, and Social Sciences. Staffed with a full-time nurse practitioner, the Nursing Clinic serves clients from the community, gives students practical clinical experience, and supports research in the College of Nursing.

Study Facilities

Graduate students are aided in their work by a graduate research laboratory and a graduate study room in the Kimball Tower, home of the college.

Faculty/Specialties

Professors

Dyer, Elaine D. (1975) Ph.D., University of Utah, 1967. Predicting Student Performance.
Leifson, June (1971) Ph.D., Brigham Young University, 1979. Handicapped Children, Family and Community Assessment.
Overfield, Theresa (1978) Ph.D., University of Colorado, Boulder, 1975. Wellness, Menopause, Methods of Research.
Wood, Camilla S. (1973) Ph.D., University of Utah, 1972. Biology, Immunology, Human Milk Studies.

Associate Professors

Isaacs, Patricia C. (1977) M.S., University of Utah, 1977. Effect of Feeding Regimens in High-Risk Infants, Growth Parameters and Blood Values in Arabic Children in Different Socioeconomic Levels.
Jensen, Marian (1970) M.S., Brigham Young University, 1979. Human Milk Energy, Stress in Mothers of Preschoolers.
Lyons, Marilyn (1966) DNSc., Rush University, 1983. Spinal Cord Injury, Immunology, Alzheimer's Disease, Neurology.
Murphy, Millene (1985) Ph.D., Brigham Young University, 1982. Neuropsychology, Cognitive Problems, Nutrition and Cognitive Development, Alzheimer's Disease.

Assistant Professors

Boland, Donna L. (1986) Ph.D., University of Utah, 1986. Productivity in Schools of Nursing, Qualitative Methodology.
Forrest, JoAnn P. (1983) M.S., University of Utah, 1970. Attitudes and Anxieties, Child and Adolescent Psychology.
Riddle, Lana B. (1971) Ph.D., Texas Woman's University, 1984. Capsular Contracture in Mammoplasty, Clinical Problems.

Graduate Programs and Degrees

Nursing Specialist (M.S.)
Nursing Practitioner (M.S.)

Areas of Specialization

Family, adult, child, community, and psychological nursing.

The master of science degree program emphasizes clinical expertise and includes graduate-level nursing theories and concepts as well as extensive clinical experience. Because research is an important component of the program, students are required to write a thesis or, with special permission, develop an innovative project.

The graduate program has four major goals: (1) to prepare expert clinicians in a nursing specialty; (2) to prepare leaders who implement changes in health care; (3) to prepare nurses who conduct research for solutions to clinical, educational, or administrative problems; and (4) to prepare nurses for doctoral study. Students may take courses to prepare them to be administrators, educators, practitioners, and/or specialists.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Nursing Specialist (M.S.)

Nursing Practitioner (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Three letters of recommendation from former teachers or employers.
 - C. Prepared statement of personal purposes and goals for graduate education.
 - D. GPA: Minimum GPA of 3.0 for last 60 hours.
- II. Prerequisites:
 - A. Baccalaureate degree in nursing from an NLN-accredited program. Graduates from state-accredited programs will be admitted on demonstration of professional proficiency equivalent to that of students from NLN-accredited programs.
 - B. Current R.N. licensure in the state of Utah.
 - C. Knowledge of physical assessment skills for clinical specialty applicants.
 - D. Completion of basic statistics course
- III. Entry times: Fall and winter semesters only.
- IV. Access to automobile: Candidates may be required to attend courses offered only in Salt Lake City to gain experience in a variety of hospitals and clinics and to visit agencies and client homes.
- V. Student malpractice: Candidates are required to carry student liability insurance. The fee is \$4, to be paid at the time of registration.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis or project hours (Nurs. 699R or 597R).
- II. Required courses: Nurs. 511, 515, 517; 699R or 698R.
- III. Electives: Determined in consultation with advisory committee.
- IV. Thesis: Thesis or project.
- V. Examination: Oral defense of thesis or project.

Program and Degree Resources

Comprehensive Clinic

Physiology Laboratory

NURSING GRADUATE COURSES

502. **Physical Assessment and Management.** (4) F, Sp, Su
Prerequisite: basic physical assessment course, concurrent registration in Nurs. 599R for 3 credit hours.
Recommended: recent physiology course.
Advanced principles and practice of biophysical assessment. Pathophysiology and management of common disorders.
504. **Psychosocial Assessment and Management.** (2) F, W
Prerequisite: concurrent registration in Nurs. 599R for 1 credit hour.
Evaluation of psychosocial status, including assessment, intervention, and referral.
506. **Biochemical Disorders.** (3) F
Clinical chemistry related to pathology and nursing intervention.
508. **Pharmacological Management.** (2) F, Su
Clinical pharmacology, principles of drug therapy, drug therapy monitoring.

- 510R. **Special Programs and Projects.** (1–4) F, W, Sp, Su
Prerequisite: consent of instructor.
511. **Professional Issues and Roles.** (3) F, Sp
Professional nursing and organizational issues related to nursing roles.
512. **Curriculum in Nursing Education.** (3) Sp
Curriculum development for nursing education, including educational issues, curriculum, and instructional design.
514. **Administrative Theories.** (3) F
Administrative theories related to interpersonal relationships, organizational behavior, and nursing management.
515. **Nursing Theories.** (2) F, W
Analysis and critique of theoretical and conceptual bases of nursing frameworks, for use in practice, research, and education.
516. **Teaching and Evaluation in Nursing.** (3) W
Instructional strategies and evaluation methods for classroom, laboratory, and clinical teaching in nursing.
517. **Nursing Research.** (2) F, W
Prerequisite: Nurs. 515.
Development of a research proposal.
518. **Nurse Administrator Role.** (3) W
Organizational structure, standards, budgeting, cost containment, quality assurance, risk management, health care needs.
519. **Management of Clients with Acute Health Problems.** (2) W
Prerequisite: Nurs. 502, 504, concurrent registration in 599R, consent of instructor, and basic life support certification. Additional fee required for advanced life support certification.
Instruction and clinical experience in management of clients with acute health problems.
520. **Promotion of Women's Health.** (4–6) W
Prerequisite: Nurs. 502, 504, 506, 508.
Nursing management of the client with obstetric/gynecological concerns. Includes clinical practice.
521. **Promotion of Child Health.** (4–6) Sp
Prerequisite: Nurs. 502.
Principles in the assessment and management of infants, children, and adolescents with a variety of health care problems. Includes clinical practice.
522. **Promotion of Health for the Elderly.** (4–6) F
Prerequisite: Nurs. 502, 504, 506, 508.
Nursing management of the elderly client. Includes clinical practice.
524. **Theories in Family Nursing.** (2) Sp
Family theories and application to nursing practice.
545. **Pathophysiology of Medical-Surgical Problems I.** (2) F
Prerequisite: Nurs. 502, concurrent registration in 599R.
Correlation of concepts in medical-surgical nursing related to organ pathology.
- 546R. **Medical-Surgical Specialties.** (3) W
Prerequisite: Nurs. 502, concurrent registration in 599R.
Correlation of theories and concepts in medical-surgical nursing related to specialty areas: oncological, neurological, cardiovascular, medical-surgical, and trauma.

556. Psychiatric Nursing Interventions. (3) F

Prerequisite: Nurs. 502, 504, concurrent registration in 599R.

Selected theoretical approaches to understanding human behavior and psychiatric disorders along with related nursing interventions.

558. Psychiatric Nursing/Family and Group Counseling. (3) W

Prerequisite: Nurs. 502, 504, concurrent registration in 599R.

Relationship of group and family theories to psychiatric nursing interventions.

560. Theory in Child Nursing. (3) F

Child nursing theory and concepts in growth and development, culture, and psychosocial interactions.

567. Child Nursing Assessment and Management in Acute Care. (4–6) W

Theory, assessment, and acute care management of children of all ages. Includes clinical practice.

573. Community Nurse Practice. (3) F

Health care delivery systems on international, national, state, and community levels, with focus on nurse's role in community settings.

577. Community Health Assessment. (3) W

Assessing community health problems and developing nurse intervention.

590R. Independent Study. (1–4) F, W, Sp, Su

Prerequisite: consent of instructor.

Individualized study.

595R. Graduate Seminar. (1–2) On dem.

Reports and readings in specialty areas: medical-surgical topics, biological variation in health and illness, psychiatric nursing.

598R. Nursing Practicum. (1–4) F, W, Sp, Su

Prerequisite: consent of instructor.

Practicum for role development as nurse specialist, administrator, practitioner, or educator in nursing specialty.

698R. Project. (1–6) F, W, Sp, Su

Prerequisite: consent of committee.

Master's project.

699R. Master's Thesis. (1–6) F, W, Sp, Su

Prerequisite: Nurs. 517, consent of committee.



COLLEGE OF PHYSICAL AND MATHEMATICAL SCIENCES

Dean: Grant W. Mason, Professor, Physics (270 ESC)
Associate Dean: Alvin C. Rencher, Professor, Statistics
(206 TMCB)

The following departments are in the College of Physical and Mathematical Sciences:

Chemistry
Computer Science
Geology
Mathematics
Physics and Astronomy
Statistics

Active in research that supports quality graduate work, the College of Physical and Mathematical Sciences has a number of special facilities and programs that enhance graduate study.

Financial Aid: Qualified graduate students receive some kind of financial aid, which may take the form of one or more of the following: teaching assistantships, scholarships (including the John Einar Anderson scholarship), internships (university-sponsored fellowships), or tuition awards. The amount of financial aid given depends upon individual merit.

RESEARCH CENTERS AND SERVICES

State Centers of Excellence

The state of Utah has established and funded a number of research and development Centers of Excellence, four of them with the principal investigators in the College of Physical and Mathematical Sciences. Patterned after a National Science Foundation project, the centers promote joint efforts between the university and industry in the development of certain needed technologies. The college's four centers are in X-ray imagery, chemical separations, computer-aided education, and supercritical fluid separation technologies.

X-Ray Imagery Center of Excellence and Laser Physics Group.

At present heavily involved in the development of advanced X-ray imaging and X-ray spectroscopy, the laser program is an interdisciplinary effort involving physics, chemistry, and electrical engineering. Aided by the award from the state, research into producing optical devices to manipulate soft X rays will be expanded. With such devices, X rays might be used to see the structure of living cells, to make smaller and faster computers, and to improve defense against ballistic missiles. Collaborative efforts have been established with Lawrence Livermore National Laboratory, Los Alamos National Scientific Laboratory, and the Materials Science Department at Stanford University. Students have the benefit of both the university

environment and the possibility of interaction with physicists in major laser programs throughout the country.

Chemical Separations Center of Excellence. The chemical separations group will be engaged in designing and building chemical separations systems that can selectively bind specific chemical structures with certain ions or molecules. The group hopes, among other things, to find ways to recover silver from waste solutions, to separate potassium from salt, and to reduce lead and nitrate ion concentrations in culinary water.

Computer-aided Education Center of Excellence. The computer-aided education group is interdisciplinary but is based in the Computer Science Department's instruction program. The group will work toward developing improved software for computer-based instruction, especially productivity tools for the creation and delivery of courseware and the application of AI techniques to the creation of adaptive teaching systems.

Advanced Supercritical Fluid Separation Technologies Center of Excellence. Instrumentation for this newly developed analytical technique, which was first successfully demonstrated at BYU, is being developed, tested, and extended to analysis of a wide variety of samples. Improvements that ensure reliability and simplicity of instrument operation are being pursued, and new and improved methods of sample introduction, separation, and detection are being emphasized. A major goal is to investigate possible application to agrochemicals, surfactants, dyes, carbohydrates, lipids, peptides, nucleosides, metabolites, steroids, and pharmaceuticals.

Center for Thermodynamics

Coordinator: Earl M. Woolley (227 ESC)

The center was established to correlate the research activity in chemical thermodynamics in the Departments of Chemistry and Chemical Engineering. It facilitates the exchange of ideas and information and coordinates the use of the many sophisticated instruments used to make thermodynamic measurements. Calorimetry is an especially strong part of this program, which also includes research in phase equilibria, solution thermodynamics, and electrochemistry.

Graduate Section of Biochemistry

Chairman: Donald L. Robertson (673 WIDB)

Offering M.S. and Ph.D. degrees through the Chemistry Department, the Graduate Section of Biochemistry was established to foster research in areas of biochemistry, including molecular biology, and to encourage cooperation among faculty members trained in chemistry and biology. Areas of research

include molecular biology of viruses, oncogenes, and chloroplast DNA; enzymology relating to nucleotide metabolism; and biochemical properties of small peptides in terms of their structure and reactions with cell membranes.

Center for Statistical and Computing Research

Director: H. Gill Hilton (223A TMCB)

The center operates under the Statistics Department, with full access to all departmental resources, to provide statistical expertise to faculty, graduate students, and off-campus researchers in other disciplines. Areas of particular strength are designing experiments and sample surveys and analyzing the resulting data. Problems are solved by application and adaptation of state-of-the-art methodology and development of new methodology as required.

RESEARCH PROGRAMS AND FACILITIES

Solid-State Physics

Experimental and theoretical studies of microscopic and macroscopic mechanisms for structural nonreconstructive phase transitions are in progress. Experimental expertise has been developed in the use of ultra-high pressures for electrical, thermodynamic, and electron spin resonance measurements on materials in the neighborhood of these transitions. In addition, theoretical studies place an emphasis on the symmetry aspects of the transition.

Astrophysics and Astronomy

Most research in astrophysics and astronomy is observational, much of it with the BYU 24-inch telescope at West Mountain Observatory, although there is also frequent use of other observatories. West Mountain Observatory is twenty miles west of campus and, at 6,800 feet, is a relatively dark and haze-free site. Topics of current or recent research include the evolutionary status of variable stars, especially classical and dwarf Cepheids, the developmental status of both old and young galactic star clusters; globular star clusters; population II stars; interstellar reddening; the reliability of secondary photometric standards; and the galaxian luminosity function.

Computer Science Programs and Laboratories

1. Computer-based Instruction Program. See preceding State Centers of Excellence section.
2. Operating Systems Laboratories. The Computer Science Department has advanced course work and laboratory facilities to support research in real time process control and in concurrent and distributed processing. Studies are under way on the creation of programming languages and operating systems that will enhance the use of concurrent processes in a distributed environment.
3. Computer Graphics Laboratories. Graphics research in the Computer Science Department concentrates on the representation of hyperdimensional objects and on the automatic generation of interactive software for graphical presentations. Current projects include shadowing and shading hyperdimension objects, creating visual and graphical programming languages, and generating high-quality user interfaces.

Earth Science Museum

Associated with the Geology Department, this developing museum with associated laboratories houses major fossil groups,

including one of the best dinosaur collections in the country. It also offers significant, and in some cases unique, assemblages of rocks, minerals, and maps, providing many research opportunities for faculty and students.

Fission Track Dating Laboratory

This laboratory provides the Geology Department with the geochronological potential to solve problems in stratigraphy and structural geology, to determine rates of uplift and subsequently to aid in thermal modeling, and to provide support for numerous other faculty and student research projects. The laboratory is fully equipped, but samples are sent elsewhere for irradiation.

In addition to facilities and programs described here, the College of Physical and Mathematical Sciences has numerous other laboratories, programs, and pieces of sophisticated equipment to support research.

DEPARTMENT OF CHEMISTRY

Chairman. J. Bevan Orr, 226 ESC, 378-3667

Graduate Coordinators: Richard T. Hawkins, 310-B ESC, 378-2569 (Chemistry); Donald L. Robertson, 659 WIDB, 378-7018 (Biochemistry)

Faculty/Specialties

Professors

- Bills, James L. (1963) Ph.D., Massachusetts Institute of Technology, 1963. Inorganic Chemistry.
- Blackham, Angus Udell (1952) Ph.D., University of Cincinnati, 1952. Organic Chemistry.
- Bradshaw, Jerald S. (1966) Ph.D., University of California, Los Angeles, 1965. Organic Chemistry.
- Butler, Eliot A. (1956) Ph.D., California Institute of Technology, 1956. Electronanalytical Chemistry.
- Cluiff, Coran L. (1960) Ph.D., University of Michigan, Ann Arbor, 1961. Inorganic Chemistry.
- Dalley, Nelson Kent (1968) Ph.D., University of Texas, Austin, 1968. Analytical Chemistry.
- Eatough, Delbert J. (1971) Ph.D., Brigham Young University, 1967. Physical Chemistry.
- Grant, David M. (1986—Joint Appointment with the University of Utah) Ph.D., University of Utah, 1958. Physical Chemistry.
- Hansen, Lee Duane (1972) Ph.D., Brigham Young University, 1965. Inorganic Chemistry.
- Hawkins, Richard T. (1959) Ph.D., University of Illinois, Urbana, 1959. Organic Chemistry.
- Izatt, Reed M. (1956) Ph.D., Pennsylvania State University, 1954. Inorganic Chemistry.
- Lee, Milton L. (1976) Ph.D., Indiana University, 1975. Analytical Chemistry.
- Mangelson, Nolan F. (1969) Ph.D., University of California, Berkeley, 1967. Physical Chemistry.
- Mangum, John Harvey (1963) Ph.D., University of Washington, 1963. Biochemistry.
- Nelson, K. LeRoy (1956) Ph.D., Purdue University, West Lafayette, 1952. Organic Chemistry.
- Nordmeyer, Francis R. (1972) Ph.D., Stanford University, 1967. Inorganic Chemistry.

- Ott, J. Bevan (1960) Ph.D., University of California, Berkeley, 1959. Physical Chemistry.
- Owen, Noel L. (1986) Ph.D., Cambridge University, 1964; D.Sc., University of Wales, 1983. Physical Chemistry.
- Paul, Edward G. (1965) Ph.D., University of Utah, 1962. Organic Chemistry.
- Pugmire, Ronald J. (1986)—Joint Appointment with the University of Utah) Ph.D., University of Utah, 1966. Physical Chemistry.
- Robins, Morris J. (1986) Ph.D., Arizona State University, 1965. Organic Chemistry.
- Smith, Marvin A. (1966) Ph.D., University of Wisconsin, Madison, 1964. Biochemistry.
- Snow, Richard L. (1957) Ph.D., University of Utah, 1957. Physical Chemistry.
- Thorne, James M. (1966) Ph.D., University of California, Berkeley, 1966. Physical Chemistry.
- Vernon, Leo P. (1970) Ph.D., Iowa State University of Science and Technology, 1951. Biochemistry.
- Wilson, Byron J. (1965) Ph.D., University of Washington, 1961. Inorganic Chemistry.
- Woolley, Earl M. (1970) Ph.D., Brigham Young University, 1969. Analytical Physical Chemistry.

Associate Professors

- Banks, Willis M. (1966) M.S., Colorado College, 1967. Inorganic Chemistry.
- Boerio-Goates, Juliana (1981) Ph.D., University of Michigan, Ann Arbor, 1979. Physical Chemistry.
- Goates, Steven R. (1981) Ph.D., University of Michigan, Ann Arbor, 1981. Analytical Chemistry.
- Lamb, John D. (1985) Ph.D., Brigham Young University, 1978. Inorganic Chemistry.
- Robertson, Donald Lee (1980) Ph.D., Washington University, 1976. Biochemistry.
- Zimmerman, S. Scott (1978) Ph.D., Florida State University, 1973. Biochemistry.

Assistant Professors

- Farnsworth, Paul B. (1981) Ph.D., University of Wisconsin, Madison, 1981. Analytical Chemistry.
- Fleming, Steven A. (1985) Ph.D., University of Wisconsin, Madison, 1984. Organic Chemistry.
- Rossiter, Bryant E. (1985) Ph.D., Stanford University, 1981. Organic Chemistry.

Graduate Programs and Degrees

- Chemistry (M.S.)
- Chemistry (Ph.D.)
- Biochemistry (M.S.)
- Biochemistry (Ph.D.)

Areas of Specialization

analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry.

Graduate degrees in biochemistry are administered by the biochemistry faculty of the Chemistry Department. Qualified faculty in other departments may (with approval) become active members of the graduate section of biochemistry and may serve as members or chairmen of graduate advisory committees.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

All graduate programs in chemistry and biochemistry have these features in common:

Admission and Entry

I. Application requirements:

- A. Deadlines: Application file complete by March 15 for fall semester, September 15 for winter semester, January 15 for spring term, February 15 for summer term. International applications should be received by February 15 for fall semester, June 30 for winter semester, October 30 for spring term, December 31 for summer term.

B. Entrance examinations:

1. GRE (optional). A prospective graduate student who chooses to submit GRE scores may find his or her application strengthened thereby. An applicant whose undergraduate degree is not in chemistry may take the advanced examination in either chemistry or in the field of the undergraduate major.
 2. Departmental qualifying examinations. Written examinations of a student's undergraduate preparation in chemistry are given during the week preceding the first semester of enrollment. Deficiencies may be removed by taking specified undergraduate courses (with a grade of B [3.0] or better) or by repeating a failed examination.
- II. Entry time: Fall semester entrance is strongly recommended. Limited admissions will be made for entry in winter semester and spring and summer terms if space is available.
- III. Teaching: The Chemistry Department relies on its graduate students to fill many assignments in laboratory and recitation instruction. Unless excused by the faculty, graduate students are expected to teach a cumulative total of at least two semesters at 20 hours a week during residency toward the doctoral degree. Master's degree candidates are expected to teach half this amount.

Chemistry (M.S.)

Admission and Entry

- I. Application requirements: See above.
- II. Prerequisites:
 - A. Baccalaureate degree in chemistry, or equivalent.
 - B. Proficiency in French, German, Japanese, or Russian; in mathematics beyond calculus; or in computer science.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Chem. 699R).
- II. Required courses: Chem. 594R (every semester in residence), 699R; other courses as specified by committee.
- III. Minor: Any approved minor.
- IV. Annual progress review and/or examination.
- V. Thesis.
- VI. Examination: Final oral examination consisting of two parts:
 - A. A public presentation of the original research described in the thesis.

- B. A comprehensive examination on course work, research, and thesis.

Biochemistry (M.S.)

Admission and Entry

- I. Application requirements: See above.
- II. Prerequisite: Baccalaureate degree in physical, biological, or agricultural sciences from an accredited institution; applicants with degrees in fields other than chemistry should have successfully completed one-year courses in general, organic, and physical chemistry.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Chem. 699R).
- II. Required courses: Chem. 585R (every semester in residence), 582, 584, 699R.
- III. Minors permissible: Any established minor in the physical, biological, agricultural, or food sciences or any combination thereof.
- IV. Annual progress review and/or examination.
- V. Thesis.
- VI. Examinations: Final oral examination and defense of thesis consisting of two parts:
 - A. A public presentation of the original research described in the thesis.
 - B. A comprehensive examination on course work, research, and thesis.

Chemistry (Ph.D.)

Admission and Entry

- I. Application requirements: See above.
- II. Prerequisites:
 - A. Baccalaureate degree in chemistry, or equivalent
 - B. Proficiency in French, German, Japanese, or Russian; in mathematics beyond calculus; or in computer science.

Requirements for Degree (all to be approved by advisory committee)

- I. Credit hours (54): Minimum 36 course work hours plus 18 dissertation hours (Chem. 799R).
- II. Required courses: Chem. 594R (every semester in residence), 799R; other courses as specified by committee.
- III. Research.
- IV. Annual progress review and/or examination.
- V. Language/skill requirement: Four options are available:
 - A. Single language in depth (reading and speaking ability). Demonstrate a thorough familiarity with French, German, Japanese, or Russian in one of the following ways:
 1. Complete a minimum of 22 semester hours in the language with a grade of B (3.0) or higher.
 2. Earn language credit through special examination (16 hours) and then be eligible to register for 6 hours of upper-division credit to fulfill the remainder of the requirement.
 3. Take a special examination from the language department that tests ability to translate literature in the field and communicate orally in the language.

In each of these three cases the language department involved must certify competency.

- B. Two languages (reading ability). Choose one of the following options:

1. Take and pass approved courses in French and/or German.
2. Complete 16 semester hours with an average grade of B (3.0) in French, German, Japanese, or Russian.

- C. One language (reading ability) and one skill subject. The student must demonstrate ability to read French, German, Japanese, or Russian described in Option B. The student must also take Math. 112 and 113 or their equivalent plus 6 hours of additional work in any combination of mathematics (Math. 214 or higher) or computer science (CS 131 or higher) or statistics (Stat. 221 or higher), approved by the graduate advisory committee as constituting a skill consistent with the student's specific academic goals.
- D. Single skill subject: 21 hours in any combination of mathematics (Math. 112 or higher) or computer science (CS 131 or higher) or statistics (Stat. 221 or higher), approved by the graduate advisory committee as constituting a skill preparation consistent with the student's specific academic goals.

- VI. Minor. Any approved minor.

- VII. Dissertation.

- VIII. Examinations: Oral examination on the dissertation consisting of two parts:

- A. A public presentation of the original research described in the dissertation.
- B. An oral examination, primarily on the dissertation.

Biochemistry (Ph.D.)

Requirements for Degree (same as for the doctor of philosophy degree in Chemistry, with the following exceptions)

- I. Prerequisite: Baccalaureate degree in physical, biological, or agricultural sciences from an accredited college or university. Those with baccalaureate degrees in fields other than chemistry should have successfully completed one-year courses in general, organic, and physical chemistry.
- II. Oral proposition examination, approved by the advisory committee.
- III. Required courses: Chem. 585R every semester in residence; 582, 584.
- IV. Minor: Any established minor in the physical, biological, agricultural, or food sciences, or any combination thereof.

CHEMISTRY GRADUATE COURSES

514. Inorganic Chemistry. (3) W

Prerequisite: Chem. 462.

In-depth treatment of theoretical concepts in inorganic chemistry and the descriptive chemistry of some of the elements.

518. Inorganic Synthesis. (2) F alt. yr.

Prerequisite: Chem. 514.

Syntheses that demonstrate a variety of techniques and a range of inorganic materials.

522. Chemical Instrumentation. (2) F

Prerequisite: Chem. 227.

Design and use of software and hardware for computer acquisition of data and experiment control in the laboratory.

523. Instrumental Analysis. (3) F

Prerequisite: completion of or concurrent registration in Chem. 464.

Modern instrumental methods and basic principles of instrumentation. Laboratory experience with a variety of instruments.

524. Analytical Chemistry. (2) W

Prerequisite: Chem. 523.

Advanced theory of measurements and techniques in chemical analysis.

552, 553. Advanced Organic Chemistry. (3) F, W

Prerequisite: Chem. 455.

Applying theoretical and practical foundations of organic chemistry to the study of structure and reactivity of organic molecules. Mechanisms and applications of many important organic reactions.

558. Organic Synthesis. (3) W alt. yr.

Prerequisite: Chem. 455, 552.

Laboratory preparations illustrating syntheses, emphasizing newer developments in strategy and methods.

561. Chemical Thermodynamics. (3) F

Prerequisite: Chem. 462.

Development of the principles of chemical thermodynamics, including laws, pure materials, mixtures, equilibria, and elementary statistical mechanics.

563. Reaction Kinetics. (3) W alt. yr.

Prerequisite: Chem. 462.

Theoretical aspects of chemical kinetics in the gas phase and in solution. Rates and mechanisms in solution, rapid reactions, and other topics.

564. Nuclear Chemistry and Radiochemistry. (2) W alt. yr.

Prerequisite: Chem. 462.

Introduction to nuclear structure, radioactivity, nuclear spectroscopy, and nuclear reactions, emphasizing applications in chemistry.

565. Introduction to Quantum Chemistry. (3) F

Prerequisite: Chem. 462.

Introduction to physical and mathematical aspects of quantum theory, emphasizing application of the Schrödinger wave equation to chemical systems.

582. Advanced Biochemistry. (3) W

Prerequisite: Chem. 481.

Intensive course emphasizing both chemical and biological aspects of biochemistry, bioenergetics, enzymes, metabolic regulation, structure, and function of nucleic acids.

584. Biochemistry Laboratory. (2) W

Prerequisite: Chem. 481.

Modern research instrumentation and current biochemical research procedures. Enzyme isolation and characterization, protein sequencing, nucleic acid manipulations.

585R. Biochemistry Seminar. (0.5) F, W

Current topics discussed by guests, faculty, and graduate students. Required of graduate students in biochemistry each semester in residence.

586. Recombinant DNA. (2) F

Prerequisite: Chem. 481.

Laboratory course covering major techniques involved in isolation, amplification, and cloning of recombinant DNA. Variety of cloning systems and methods of identification introduced.

594R. General Seminar. (0.5) F, W

Required every semester in residence.

Research topics presented by faculty and visiting scientists.

598R. Special Problems. (1–6 Attr.) F, W, Sp, Su

Registration by permission.

Undergraduate research experience emphasizing student development.

—Special Problems

—Organic Preparations

619R. Advanced Topics in Inorganic Chemistry. (3) F

Prerequisite: Chem. 514.

The following topics are taught in alternate years:

—Chemistry of the Main Group Elements

—Chemistry of the Transition Elements

629R. Advanced Topics in Analytical Chemistry. (3) W

Prerequisite: Chem. 524.

The following topics are taught in alternate years:

—Separation Methods of Analysis

—Spectroscopic Methods of Analysis

659R. Advanced Topics in Organic Chemistry. (3) F, W

Prerequisite: Chem. 553.

The following topics are rotated yearly:

—Organic Heterocycles

—Mechanisms of Reactions

—Organometallic Chemistry

669R. Advanced Topics in Physical Chemistry. (2–3) F, W

Prerequisite: Chem. 561 and/or 565.

The following topics are rotated yearly:

—Advanced Chemical Thermodynamics

—Statistical Mechanics

—Quantum Chemistry

689R. Advanced Topics in Biochemistry. (1–3) F, W

Prerequisite: Chem. 582.

The following topics are rotated yearly:

—Metabolic Integration

—Biomembranes and Bioenergetics

—Proteins and Enzymes

697R. Master's Candidate Research. (1–6) F, W, Sp, Su

699R. Master's Thesis. (1–9) F, W, Sp, Su

719R. Selected Topics in Inorganic Chemistry. (1–3)

On dem.

729R. Selected Topics in Analytical Chemistry. (1–3)

On dem.

Subjects which may be offered include:

—X-Ray Structure Analysis

—Atomic Spectroscopy

—Nonlinear Molecular Spectroscopy

—Electrochemical Methods of Analysis

759R. Selected Topics in Organic Chemistry. (1–3)

On dem.

Subjects which may be offered include:

—Medicinal Chemistry

—Natural Products

—Organic Photochemistry

—Organic Separations

—Stereoselective Synthesis

—Spectroscopic Identification

—Synthetic Polymers

- 769R. Selected Topics in Physical Chemistry. (1-3) On dem.
- 789R. Selected Topics in Biochemistry. (1-3) On dem.
- 797R. Doctoral Candidate Research. (1-9) F, W, Sp, Su
- 799R. Doctoral Dissertation. (1-9 Arr.) F, W, Sp, Su

DEPARTMENT OF COMPUTER SCIENCE

Chairman: Bill Hays, 230 TMCB, 378-3027
Graduate Coordinator: Gordon E. Stokes, 230C, TMCB,
378-6468

Faculty/Specialties

Professors

- Burton, Robert C. (1964) Ph.D., University of North Carolina, 1963. Computer-aided Design.
- Burton, Robert Prece (1974) Ph.D., University of Utah, 1973. Hyperdimensional Graphics.
- Campbell, Douglas M. (1971) Ph.D., University of North Carolina, 1971. Complexity Theory.
- Crandall, Vern J. (1968) Ph.D., University of Washington, 1972. System Analysis, Design, Implementation.
- Embley, David W. (1982) Ph.D., University of Illinois, 1976. Data Base Systems, Computer-assisted Software Engineering.
- Hays, Bill (1970) Ph.D., Northwestern University, 1970. Data Base Systems, Compiler Development.
- Higgins, John C. (1961) Ph.D., University of California, Berkeley, 1966. Theoretical Foundations.
- Ivic, Evan Leon (1979) Ph.D., Massachusetts Institute of Technology, 1966. Operating Systems.
- Linebarger, Robert N. (1981) Ph.D., Case Institute of Technology, 1963. Communications, Networking.
- Norman, Theodore A. (1970) Ph.D., Washington State University, 1970. Systems Simulation.
- Stokes, Gordon E. (1969) Ed.D., Brigham Young University, 1981. Data Base Management, Human Factors, Intelligent CBI Systems.

Associate Professors

- Barrett, William A. (1987) Ph.D., University of Utah, 1978. Image Processing.
- Beus, H. Lynn (1971) Ph.D., Case Western Reserve University, 1967. Pattern Recognition.
- Call, Duane B. (1971) Ph.D., University of Utah, 1971. Computer Architecture, Parallel Processing.
- Olsen, Dan R. (1985) Ph.D., University of Pennsylvania, 1981. Human-Computer Interfaces.
- Soceneantua, Aurel (1980) Ph.D., Polytechnic Institute of Timisoara, (Rumania), 1971. Distributed/Concurrent Programming.
- Todd, Henry S. (1982) Ph.D., University of Arizona, 1973. Digital Signal Processing.
- Woodfield, Scott N. (1985) Ph.D., Purdue University, 1980. Software Design, Computer-assisted Software Engineering.

Assistant Professors

- Christensen, Larry Cleon (1983) Ed.D., Brigham Young University, 1981. Expert Systems, Computer-assisted Instruction.

Martinez, Tony (1987) Ph.D., University of California, Los Angeles, 1986. Neural Networks, Parallel Processing.

Graduate Programs and Degrees

Computer Science (M.S.)
Computer Science (Ph.D.)

Areas of Specialization

See faculty specialties.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Computer Science (M.S.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE, score subject to review.
- II. Prerequisite: Baccalaureate degree in computer science or equivalent course work in related undergraduate programs.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (CS 699R).
- II. Required courses: Determined in consultation with advisory committee. (No graduate credit is given for courses numbered less than 400 or for 400-level courses required of undergraduate majors).
- III. Thesis
- IV. Examinations: Final oral examination and defense of thesis.

Computer Science (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: March 15 for fall semester; June 15 for winter semester.
 - B. Entrance examinations:
 1. General and advanced computer science GRE.
 2. TOEFL examination for those whose native language is not English.
 - C. GPA: 3.25 or higher in the last 60 semester hours of college work.
- II. Prerequisite: Baccalaureate degree in computer science or equivalent (students with undergraduate deficiencies should enroll in the M.S. program).
- III. Entry times: Fall and winter semesters.

Requirements for Degree

- I. Credit hours (84): Minimum 60 course work hours plus 24 hours of dissertation research.
- II. Skill/Language requirement: One of the following:
 - A. Take and pass language courses 121 and 122 in either French, German, Russian or Japanese.
 - B. Complete 16 semester hours with an average grade of B (3.0) in language courses.
 - C. Pass language proficiency examinations.
 - D. 9 credit hours from EPsy. 584, 661, Stat. 501, 502.

Note: None of the skill or language courses will be allowed to count toward the 60-hour course work requirement.
- III. Dissertation.

- IV. Examinations:
- A. Qualifying examinations: A series of examinations demonstrating broad proficiency in computer science. See department for details.
 - B. Preliminary evaluation: Examination on comprehensive knowledge in a chosen specialization and defense of a dissertation proposal before beginning dissertation research.
 - C. Oral defense of dissertation.
- V. Residency: A student must spend at least the last three consecutive semesters as a full-time resident (combined spring and summer terms count as one semester).
- VI. Teaching: All students must teach at least one semester.

Program and Degree Resources

Computer-based Instruction Laboratory
 Operating Systems Laboratories
 Computer Graphics Laboratories
 Artificial Intelligence and Expert Systems Laboratories
 Computer Vision Laboratory
 Interactive Software Systems Laboratory

COMPUTER SCIENCE GRADUATE COURSES

501R. Special Topics in Computer Science. (1–3) F, W, Sp, Su

Prerequisite: consent of instructor.

Special subjects as announced before each semester.

505. Computer-aided Circuit Design. (3)

Prerequisite: CS 351, 380.

Chip simulation algorithms, schematic capture algorithms, and algorithms for solving very large sets of stiff, coupled, nonlinear equations, including Gear algorithms, relaxation algorithms, sparse matrix methods.

510. Formal Languages and Syntactic Analysis. (3)

Prerequisite: CS 431 or consent of instructor.

Definition of formal grammars and algorithms for syntactic analysis.

512. Analysis of Algorithms. (3)

Prerequisite: CS 352 or consent of instructor.

Survey of important algorithms. Connections to theoretical computer science and the analysis of algorithms.

521. Pattern Recognition. (3)

Prerequisite: CS 351 or consent of instructor.

Using computers to analyze, recognize, or describe complex objects such as handwriting, pictures, voice, or experimental data. Emphasis on handwriting.

525. Software Creation. (3)

Prerequisite: CS 427.

Creating large software systems: requirements, specification, rapid prototyping, high-level design, low-level design, coding.

526. Software Evolution. (3)

Prerequisite: CS 425, 427.

Principles associated with evolution of large software systems. Corrective, adaptive, and perfective maintenance, quality aspects of easily maintained software, ripple effect, and regression testing.

527. Software Management. (3)

Prerequisite: CS 425, 427.

Principles associated with management of large software systems. Controlling development, cost and time estimations, metrics, team structures, configuration management, and quality assurance.

531. Compiler Theory and Design. (3)

Prerequisite: CS 431.

Theory and design of compilers and interpreters, including syntax-directed compilers and metacompilers.

535. Human Factors. (3)

Prerequisite: CS 344, 431.

Man/machine interfaces for hardware/software integration. Psychological principles of computer interfacing. Human engineering, ergonomics, software design principles for user-friendly applications.

544. Advanced Operating Systems. (3)

Prerequisite: CS 444.

Advanced operating system concepts and design techniques, including concurrency, distributed systems, networking, synchronization, multitasking, etc.

551. Relational Data Base Theory 1. (3)

Prerequisite: CS 451.

Relational algebra, data dependencies, normalization, and design theory.

555. Advanced Computer Graphics. (3)

Prerequisite: CS 455 or consent of instructor.

Advanced interactive computer graphics systems programming and architecture.

556. Interactive Software Systems. (3)

Prerequisite: CS 330, 455.

Techniques to implement human/computer interfaces. Primitive interactive techniques. Grammar, automata, procedure, object-based dialogue descriptions. Tools for automatically generating and evaluating user interfaces. Screen layout; data presentation tools.

560. Computer Networks. (3)

Prerequisite: CS 460, Stat. 321.

Computer networking, software architecture, organization, protocols, routing, global networks, local networks, internetworking, standards, and applications.

561. Theoretical Foundations of Computer Science. (3)

Prerequisite: CS 352 or consent of instructor.

Formal languages, automata theory, sequential machines, enumerability, computability, and undecidability.

562. Digital Communication Systems. (3)

Prerequisite: CS 460.

Data communication technology and systems; architecture, transmission, switching, media, channel utilization, satellites, topology, throughput, reliability, and applications.

565. Data Security. (3)

Prerequisite: CS 404. Recommended: CS 451, 560.

Data security problems and solutions. Protection of stored or transported data. Data security principles. Hardware and software systems; mathematical, technical, and legal considerations.

571. Discrete Systems Simulation. (3)

Prerequisite: CS 232, 431, or consent of instructor.

Computer simulation using resources, policies, and processes. Models built and analyzed.

575. Expert Systems Design. (3)

Prerequisite: CS 370, 470.

Knowledge-based systems, fundamentals of knowledge engineering, rule-based systems, tools for expert system development.

581. Advanced Computer Architecture. (3)

Prerequisite: CS 380, 444. Recommended: CS 480.

Designing innovative and relevant machine organizations.

598R. Special Projects. (1-3) F, W, Sp, Su

Prerequisite: consent of instructor.

632. Programming Models, Languages, and Environments. (3)

Prerequisite: CS 431.

Advanced topics in language design and implementation models for data description and for executing functional languages, including data-driven lazy evaluation. Logic languages and their implementations. Object-oriented languages. Language-specific programming environments.

644. Operating Systems Research. (3)

Prerequisite: CS 544.

Latest research and current literature in operating systems.

651. Relational Data Base Theory 2. (3)

Prerequisite: CS 551.

Relational calculus, query languages and relational completeness, query optimization, topics of current interest.

655. Advanced Computer Graphics Rendering. (3)

Prerequisite: CS 555.

Generating realistic computer images, including air, plants, trees, terrain, and textured surfaces. Stochastic and generative image modeling, advanced lighting, shading, and shadowing techniques.

660. Distributed Systems. (3)

Prerequisite: CS 344, 451, 560, 562.

Analysis and design of distributed systems architecture. Operating system, data base, and computer network considerations. Synthesis techniques and examples.

699R. Master's Thesis. (Arr.) F, W, Sp, Su

Prerequisite: consent of committee chairman.

799R. Doctoral Dissertation. (1-9 Arr.) F, W, Sp, Su

Prerequisite: consent of committee chairman.

DEPARTMENT OF GEOLOGY

Chairman: Wade E. Miller, 258 ESC, 378-3918

Graduate Coordinator: Wm. Revell Phillips, 130 ESC, 378-4545

Faculty/Specialties

Professors

Baer, James L. (1969) Ph.D., Brigham Young University, 1968. Geologic Engineering.

Benson, Alvin K. (1986) Ph.D., Brigham Young University, 1972. Geophysics.

Best, Myron G. (1965) Ph.D., University of California, Berkeley, 1961. Petrology, Tectonics.

Brimhall, Willis H. (1955) Ph.D., Rice University, 1966. Geochemistry.

Hamblin, William Kenneth (1962) Ph.D., University of Michigan, Ann Arbor, 1958. Sedimentation.

Miller, Wade E. (1971) Ph.D., University of California, Berkeley, 1968. Vertebrate Paleontology.

Petersen, Morris S. (1966) Ph.D., University of Iowa, 1962. Invertebrate Paleontology.

Phillips, Wm. Revell (1957) Ph.D., University of Utah, 1954. Mineralogy.

Rigby, J. Keith (1953) Ph.D., Columbia University, 1952. Invertebrate Paleontology.

Associate Professors

Griffen, Dana Thomas (1979) Ph.D., Virginia Polytechnic Institute, 1975. Mineralogy.

Mayo, Alan L. (1987) Ph.D., University of Idaho, 1981. Hydrogeology

Assistant Professors

Christiansen, Eric H. (1986) Ph.D., Arizona State University, 1981. Economic Geology, Geochemistry.

Kowallis, Bart J. (1982) Ph.D., University of Wisconsin, Madison, 1981. Structural Geology.

Graduate Programs and Degrees

Earth Science Teaching (M.A.)

Geology (M.S.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Earth Science Teaching (M.A.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: Applications received before March 15 for fall semester, or October 15 for winter semester will receive priority consideration.
 - B. Entrance examination: General GRE and advanced subject (undergraduate major) test; minimum 50 percentile score. GRE scores must be received in the Geology Department before application for admission will be considered.
 - C. GPA: Minimum 3.0 overall and in all undergraduate major classes.
- II. Prerequisite: Baccalaureate degree in physical or biological sciences. Arrangements to make up any undergraduate deficiencies will be made in consultation with Geology Department earth science coordinator.
- III. Entry times: Fall and winter semesters only.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Geol. 699R).
- II. Required courses: 12 hours in geology and 12 hours in the associated fields of astronomy, botany, chemistry, geography, mathematics, physics, and zoology.
- III. Thesis representing research work in the field of earth science under faculty advisor's supervision.

- IV. Examinations:
- Comprehensive written examination on course work prior to thesis defense.
 - Final oral defense of thesis.

Geology (M.S.)

Admission and Entry

- Application requirements:
 - Deadlines: Applications received before March 15 for fall semester or October 15 for winter semester will receive priority consideration.
 - Entrance examination: General GRE and advanced subject test; minimum 50 percentile score on both. GRE scores must be received in the Geology Department before application for admission will be considered.
 - GPA: Minimum 3.0 GPA overall and in all physical science (mathematics, chemistry, computer science, physics) as well as in geology courses.
- Prerequisite: Baccalaureate degree. Arrangements to satisfy undergraduate deficiencies are to be made in consultation with coordinator.
- Entry times: Fall and winter semesters only.

Requirements for Degree

- Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Geol. 699R).
- Required courses: To be determined in consultation with advisor.
- Published thesis.
- Examination: Oral defense of thesis.

GEOLOGY GRADUATE COURSES

502. Geology for Teachers. (2) W

Prerequisite: Geol. 101, 103; or 111, 112.

Materials and methods useful for junior and senior high school earth science teachers.

510. Conducted Field Trips. (1) F, W, Sp, Su

Prerequisite: any college-level geology course, consent of instructor.

Geology field trips.

511. Advanced Structural Geology. (3) Alt. yr.

Prerequisite: Geol. 311, 410.

In-depth discussions of a variety of topics in structural geology, emphasizing current literature and problems.

512. Geology of North America. (4) Alt. sem.

Prerequisite: Geol. 311.

Region-by-region study of the area geology, physiography, and geologic development.

520. Petroleum Geology. (3) Alt. yr.

Prerequisite: Geol. 311, 370.

Origin, migration, and entrapment of liquid and gaseous hydrocarbons.

521. Borehole Geophysics and Geology. (2) Alt. yr.

Prerequisite: Phscs. 105, 106 or 121, 122; Geol. 351, 370.

Applied well log analysis, including conventional and new techniques.

545. Principles of Geochemical Exploration. (3) Alt. yr.

Prerequisite: consent of instructor.

Principles of geochemical exploration for metals and hydrocarbon deposits.

550. X-Ray Diffraction. (3) On dem.

Prerequisite: Geol. 351, Phscs. 221.

Geologic applications of X-ray crystallography using both powder and single crystal X-ray diffraction methods.

551. Advanced Mineralogy. (3) Alt. sem., Alt. yr.

Prerequisite: Geol. 351, Phscs. 221.

Crystallography, structure, and crystal chemistry of major mineral groups studied by X-ray diffraction and other methods.

552. Instrumental Methods. (3) Alt. sem., Alt. yr.

Prerequisite: Geol. 352, 451.

Modern laboratory methods for analyzing rocks and minerals; spectrometry, X-ray diffraction, electron microscopy.

559. Exploration Geophysics 1. (3) Alt. sem., Alt. yr.

Prerequisite: Geol. 311, Phscs. 221.

Principles, tools, and methods used in gravity and magnetic exploration, with some discussion of electrical methods.

560. Exploration Geophysics 2. (3) Alt. sem., Alt. yr.

Prerequisite: Geol. 311, 559, Phscs. 221.

Principles, tools, and methods used in seismic exploration.

561. Ore Deposits. (3) F alt. yr.

Prerequisite: Geol. 460.

Origin, classification, and distribution of metallic ore deposits.

563. Mining Geology. (3) On dem.

Prerequisite: Geol. 460.

Ore search and appraisal; assembling geological data; mining techniques; ore treatment.

574. Principles of Stratigraphy. (3) Alt. yr.

Prerequisite: Geol. 370.

Study of the stratigraphic record.

580. Principles of Paleontology. (3) Alt. yr.

Prerequisite: Geol. 480.

Modern approaches to fossil study applied to areas of evolution, paleoecology, and biostratigraphy.

582. Biostratigraphy. (3) Alt. yr.

Prerequisite: Geol. 480 or 580.

Fossils in their stratigraphic setting and principles of paleontologic chronology.

586. Vertebrate Paleontology. (4) Alt. yr.

Prerequisite: Geol. 112, 286, or any basic course in zoology.

History of vertebrate fossils. Field trips required. Credit applies in either zoology or geology. Laboratory studies.

590R. Short Courses. (1-3) F, W on dem.

Short graduate-level courses offered on a random basis.

591R. Seminar. (0-0.5) F, W

Seminars on various geologic topics by guest speakers. Total of 1 credit hour required.

599R. Cooperative Education. (1-9V) F, W, Sp, Su

635. Advanced Hydrogeology. (3)

Prerequisite: Geol. 435, Math. 321, or concurrent registration.

Equations governing fluid flow through saturated porous media under various geologic conditions; applying hydraulic characteristics to analysis of well and aquifer conditions.

636. **Hydrogeochemistry.** (3) Alt. yr.
Prerequisite: Geol. 435 or consent of instructor, Chem. 106 and 107, or 112.
Nature and origin of solutes and isotopes in groundwater systems. Applying geochemistry to evaluation of groundwater recharge conditions and flow patterns.
637. **Groundwater Modeling.** (3) Alt. yr.
Prerequisite: Geol. 435 or consent of instructor, Chem. 106 and 107, or 112.
Computer modeling and groundwater systems.
655. **Igneous Petrology.** (3) W on dem.
Prerequisite: Geol. 552.
Origin and crystallization behavior of magmas, emphasizing crystal-liquid relations in simple experimental systems.
671. **Sedimentary Petrology—Carbonate Rocks.** (3) On dem.
672. **Sedimentary Petrology—Clastic Rocks.** (3) On dem.
Prerequisite: Geol. 370.
685. **Paleoecology.** (4) Alt. yr.
Prerequisite: Geol. 480 or 580.
Ancient environments and ecology of major taxonomic groups.
- 695R. **Research.** (1–4) F, W, Sp, Su
696R. **Readings and Conferences in Geology.** (1–4) F, W, Sp, Su
697R. **Directed Field Studies.** (1–6) F, W, Sp, Su
699R. **Master's Thesis.** (6–9) F, W, Sp, Su

DEPARTMENT OF MATHEMATICS

Chairman: Peter L. Crawley, 290 TMCB, 378-2061
Associate Chairman: Hal G Moore, 288 TMCB, 378-2319
Graduate Coordinator: Louis J. Chatterley, 350 TMCB, 378-3286

Faculty/Specialties

Orson Pratt Professor

Cannon, James W. (1986) Ph.D., University of Utah, 1969.
Geometric Topology.

Professors

Chatterley, Louis J. (1962) Ph.D., University of Texas, Austin, 1972. Mathematics Education.
Crawley, Peter L. (1971) Ph.D., California Institute of Technology, 1961. Infinite Groups.
Fearley, Lawrence (1957) Ph.D., University of London, 1970. Topology.
Ferguson, Helaman R. P. (1971) Ph.D., University of Washington, 1971. Group Representations.
Fletcher, Harvey J., Jr. (1980) Ph.D., University of Utah, 1954. Applied Mathematics.
Garner, Lynn E. (1963) Ph.D., University of Oregon, 1968. Geometry, Commutative Algebra, Number Theory.
Gee, Burton C. (1960) Ed.D., Oregon State University, 1965. Mathematics Education.

Gill, Gurcharan S. (1960) Ph.D., University of Utah, 1965. Functional Analysis.
Hansen, Richard A. (1967) Ph.D., University of Utah, 1965. Numerical Analysis.
Hillam, Kenneth L. (1957) Ph.D., University of Colorado, Boulder, 1962. Complex Functional Theory.
Jamison, Ronald D. (1963) Ph.D., University of Utah, 1965. Systems of Ordinary Differential Equations.
Larsen, Kenneth M. (1960) Ph.D., University of California, Los Angeles, 1964. Applied Mathematics.
Moore, Hal G. (1961) Ph.D., University of California, Santa Barbara, 1967. Ring Theory.
Peterson, John Milo (1965) Ph.D., University of Georgia, 1965. Mathematics Education.
Robinson, Donald W. (1956) Ph.D., Case Institute of Technology, 1956. Linear Algebra.
Snow, Donald Ray (1969) Ph.D., Stanford University, 1965. Calculation of Variations, Functional Equations.
Speiser, Robert David (1984) Ph.D., Cornell University, 1970. Algebraic Geometry and Commutative Algebra.
Wickes, Harry E. (1957) Ed.D., Colorado State University, 1967. Mathematics Education.
Wight, Theodore A. (1963) Ed.D., University of Utah, 1969. Mathematics Education.
Yearout, Paul H. (1962) Ph.D., University of Washington, 1961. Algebra.

Associate Professors

Armstrong, Gerald M. (1970) Ph.D., University of Wisconsin, Madison, 1971. Real Analysis.
Bartlett, Wayne Walton (1981) Ph.D., New York University, 1975. Matrix Theory and Applied Mathematics.
Bates, Peter W. (1984) Ph.D., University of Utah, 1976. Partial Differential Equations.
Chahal, Jasbir S. (1981) Ph.D., Johns Hopkins University, 1979. Algebraic Number Theory.
Forcade, Rodney W. (1981) Ph.D., University of Washington, 1971. Combinatorics.
Garbe, Douglas G. (1963) Ph.D., University of Texas, Austin, 1973. Mathematics Education.
Lamoreaux, Jack W. (1968) Ph.D., University of Utah, 1967. Topology.
Pollington, Andrew D. (1982) Ph.D., University of London, 1978. Number Theory.
Skarda, R. Vencil (1965) Ph.D., California Institute of Technology, 1965. Functional Analysis.
Smith, William V. (1985) Ph.D., University of Utah, 1978. Spectral Theory.
Tolman, L. Kirk (1965) Ph.D., University of New Mexico, 1972. Graph Theory.
Walter, Charles N. (1969) Ph.D., University of New Mexico, 1970. Algebraic Geometry and Ordered Fields.
Wright, David G. (1983) Ph.D., University of Wisconsin, Madison, 1973. Geometric Topology.
Wynn, Jan Eugene (1966) Ph.D., Colorado State University, 1972. Padé Approximations.

Assistant Professor

Humphries, Stephen B. (1987) Ph.D., University of Wales, 1983. Low-dimensional Topology, Classical Groups.

Graduate Programs and Degrees

Mathematics (M.S.)
Mathematics (M.A.)
Mathematics Education (M.A.)
Mathematics (Ph.D.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS**Mathematics (M.S.)****Admission and Entry**

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. GRE recommended; required for international applicants.
- II. Prerequisites:
 - A. Credit at least equivalent to BYU requirements for a baccalaureate degree in mathematics.
 - B. A year's sequence in abstract algebra.
 - C. A year's sequence in advanced calculus.

Requirements for Degree—Option 1

- I. Thesis program.
 - A. Credit hours (33): Minimum 33 hours including 18 graduate mathematics hours, 9 minor hours, and 6 thesis hours (Math. 699R).
 - B. Required courses: Math. 551, 631 or 641, 671, 699R.
 - C. Minor required: 9 approved hours.
 - D. Thesis.
 - E. Examination: Oral defense of thesis.
- II. Nonthesis program.
 - A. Credit hours (36): Minimum 36 course work hours including 27 graduate mathematics hours and 9 minor hours.
 - B. Required courses: Math. 551, 631 or 641, 671.
 - C. Minor required: 9 approved hours.
 - D. Examination: Written departmental examination.

Requirements for Degree—Option 2

This program is designed to prepare students for additional study and research in mathematics at the Ph.D. level or employment in industry and government.

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Math. 699R).
- II. Required courses: Three of the four sets: Math. 551, 552; 631, 641; 634, 647; 671, 672.
- III. Thesis.
- IV. Examination: Oral defense of thesis.

Mathematics (M.A.)

This program is designed to prepare students for teaching mathematics in junior college or secondary schools.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. GRE recommended; required for international applicants.
- II. Prerequisite: Credit at least equivalent to the current BYU requirements for a B.A. degree in education with a teaching major in mathematics, a B.A. degree in mathematics, or a B.S. degree in mathematics.

Requirements for Degree

- I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Math. 699R).

- II. State teacher certification (required certification courses may not be part of the graduate program).
- III. Required courses: Math. 541, 542, 629; any two-semester 600 sequence or Math. 551, 552.
- IV. Minor: Any approved minor.
- V. Thesis.
- VI. Examination: Oral defense of thesis.

Mathematics Education (M.A.)**Admission and Entry**

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: GRE recommended; required for international applicants.
- II. Prerequisite: In-service status as a secondary teacher of mathematics.

Requirements for Degree

- I. Credit hours (36): Minimum 36 course work hours (24 hours in mathematics, 12 hours in education).
- II. Required courses: Math. 629 and any seven courses selected from 300, 301, 302, 332, 343, 371, 387, 451R, or any other 500 or 600-level courses. Minimum of 20 hours must be in the 500 series or above.
- III. Minor required: 12 hours in education.
 - A. Required course: ELDR 531.
 - B. ELDR 630, 696R; EPsy. 502, 564, 601; ScEd. 539R.
- IV. No thesis required.

Mathematics (Ph.D.)**Admission and Entry**

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examinations: General and advanced Mathematics GRE. Every international applicant whose native language is not English is required to take the Test of English as a Foreign Language (TOEFL).
- II. Prerequisites:
 - A. Undergraduate degree in mathematics or its equivalent.
 - B. One year of mathematical analysis (or advanced calculus).
 - C. One year of abstract algebra, including linear algebra.

Requirements for Degree

- I. Credit hours (54): Minimum 36 course work hours in mathematics courses numbered 600 or above with a grade of B or better in each, plus 18 dissertation hours (Math. 799R).
- II. Required courses: Complete at least 3 hours each in algebra, analysis, applied mathematics, and geometry/topology.
- III. Examinations:
 - A. Written examinations: At the beginning of the second year, the student is required to pass examinations in three of the four areas of algebra, analysis, applied mathematics, and geometry/topology. Four hours are allotted to each examination. A failed examination may be repeated once at the beginning of the winter semester of the student's second year, after which permission must be obtained from the department graduate committee to retake the examination. Passed examinations need not be repeated. Syllabi are available for each examination.

- B. Oral examination: A student must pass an oral qualifying examination covering the background necessary for research in a specific area. The student, having chosen a research area and having a dissertation advisor approved, will, with the advisor, outline suitable examination topics. These topics must be approved by an examination committee of three (including advisor) appointed by the department graduate committee, which conducts the examination.
- C. Defense of dissertation: A final oral defense of the dissertation is conducted by a faculty committee consisting of the student's research advisor, two other readers of the dissertation (one of whom may be an outside examiner), and two other members of the faculty.
- IV Language requirement: Demonstrate proficiency in two approved foreign languages that are currently in major use in the mathematical literature. At present the approved languages are French, German, Russian, and Italian. Another language may in certain cases be substituted for one of these if the department graduate committee approves. The committee will consider the current usage of the language in the student's specialty area. The examinations are offered by the Mathematics Department twice a year. They are designed to test a student's ability to translate, with the aid of a dictionary, mathematical literature into scientifically correct English.
- V Dissertation.

MATHEMATICS GRADUATE COURSES

501. Real Numbers. (3) F

Prerequisite: Math. 371.

Extensive examination of various axiomatic descriptions of the real numbers and the interrelationships among these descriptions.

502. Set Theory. (3) W

Prerequisite: Math. 371.

Zermelo-Fraenkel axioms for set theory, the axiom of choice, ordinal and cardinal numbers, and algebra of sets.

508. Mathematical Logic. (3) On dem.

Prerequisite: Math. 371 or 541.

Propositional and first-order predicate calculi, set theories, well-ordering, and transfinite induction.

512. Numerical Analysis. (3) On dem.

Prerequisite: Math. 411.

Theory of constructive methods in mathematical analysis.

513R. Advanced Topics in Applied Mathematics. (3)

On dem.

Prerequisite: consent of instructor.

521, 522. Methods of Applied Mathematics. (3 ea.) F, W

Prerequisite: Math. 343 and 434 (or 321).

Survey of current methods, continuous and discrete, including linear algebra, estimation, differential equations of equilibrium, eigenvalue and initial value problems; finite element, spectral, transform and difference methods; Fourier series, the Fourier matrix, fast Fourier transform; convolution.

530. Calculus of Variations. (3) On dem.

Prerequisite: Math. 321 or 434, and 343. Recommended:

Math. 323, 541.

Euler-Lagrange equation, sufficient conditions, Hamilton's principle of least action, Dirichlet's principle; applications to mechanics, geometry, economics, eigenvalue problems, direct methods.

541, 542. Introduction to Real Analysis. (3 ea.) F, W

Prerequisite: Math. 344 or 315 for 541; Math. 541 for 542.

Rigorous treatment of continuity, differentiability, integration of functions of real variables, and infinite series.

543. Advanced Probability. (3) On dem.

Prerequisite: multivariable calculus. Recommended: Stat. 341 or 520.

Combinatorial methods, random walk, Markov chains, stochastic processes.

551, 552. Introduction to Topology. (3 ea.) 551, F; 552, W

Prerequisite: completion of or concurrent registration in Math. 541 for 551; Math. 551 for 552.

Axiomatic treatment of linearly ordered spaces, metric spaces, arcs, and Jordan curves; types of connectedness.

585. Matrix Analysis. (3) On dem.

Prerequisite: Math. 343.

Special classes of matrices, canonical forms, matrix and vector norms, localization of eigenvalues, matrix functions, applications.

599R. Cooperative Education. (1-9) On dem

On-the-job experience.

629. Teaching Mathematics in Secondary Schools. (3)

On dem.

631, 632. Complex Analysis. (3 ea.) On dem.

Prerequisite: Math. 332, 542 for 631; Math. 631 for 632.

634, 635. Theory of Ordinary Differential Equations.

(3 ea.) On dem

Prerequisite: Math. 321 or 434; 647.

641, 642. Functions of a Real Variable. (3 ea.) Alt yr

Prerequisite: Math. 542 for 641; Math. 641 for 642.

643R. Special Topics in Analysis. (3) On dem.

Prerequisite: Math 542.

Continued fractions, stochastic processes, generalized functions, etc.

645. Tensor Analysis. (3) On dem.

Prerequisite: Math. 344 or 542.

647, 648. Theory of Partial Differential Equations. (3 ea.)

On dem.

Prerequisite: Math. 323, 542 for 647; Math. 647 for 648.

651, 652. General Topology 1, 2. (3 ea.) On dem.

Prerequisite: consent of instructor.

653R. Special Topics in Geometry. (3) On dem.

Prerequisite: Math. 372, 451R.

Topics from n-dimensional projective and algebraic geometry, foundations, transformations, curves and surfaces, forms and sheaf theory.

655R. Advanced Special Topics in Topology. (3) On dem.

Prerequisite: consent of instructor

- 661, 662. **Functional Analysis.** (3 ea.) On dem.
Prerequisite: Math. 641 for 661; Math. 661 for 662.
- 671, 672. **Algebra.** (3 ea.) F, W
Prerequisite: Math. 372 for 671; Math. 671 for 672.
- 675R. **Special Topics in Algebra.** (3) On dem.
Prerequisite: Math. 372.
681. **Linear Algebra.** (3) On dem.
Prerequisite: Math. 372.
- 695R. **Readings in Mathematics.** (1–2) F, W, Sp, Su
- 699R. **Master's Thesis.** (1–9 Arr.) F, W, Sp, Su
- 799R. **Doctoral Dissertation.** (Arr.)

DEPARTMENT OF PHYSICS AND ASTRONOMY

Chairman: Howard B. Vanfleet, 296 ESC, 378-4361
Graduate Coordinator: Dorian M. Hatch, 277 ESC, 378-2427

Faculty/Specialties

Professors

- Ballif, Jae R. (1962) Ph.D., University of California, Los Angeles, 1962. Space Physics.
- Barnett, J. Dean (1958) Ph.D., University of Utah, 1959. Solid-State Physics.
- Decker, Daniel L. (1958) Ph.D., University of Illinois, Urbana, 1958. Solid-State Physics.
- Dibble, William E. (1961) Ph.D., California Institute of Technology, 1960. X Rays.
- Dudley, J. Duane (1956) Ph.D., University of Utah, 1959. Acoustics.
- Evenson, William E. (1970) Ph.D., Iowa State University of Science and Technology, 1965. Solid State Physics, Theoretical Physics.
- Gardner, John H. (1949) Ph.D., Harvard University, 1950. Quantum Mechanics.
- Hansen, H. Kimball (1963) Ph.D., University of California, Berkeley, 1966. Astrophysics.
- Harrison, B. Kent (1964) Ph.D., Princeton University, 1959. General Relativity.
- Hatch, Dorian M. (1968) Ph.D., State University of New York, 1968. Theoretical Solid-State Physics, Group Theory.
- Hill, Max W. (1958) Ph.D., University of California, Berkeley, 1959. Nuclear Physics.
- Jensen, Gary Lee (1966) Ph.D., University of Michigan, Ann Arbor, 1964. Nuclear Physics.
- Jones, Douglas E. (1964) Ph.D., Brigham Young University, 1964. Space.
- Knight, Larry V. (1973) Ph.D., Stanford University, 1965. Lasers, X Rays.
- Larson, Everett Gerald (1964) Ph.D., Massachusetts Institute of Technology, 1964. Theoretical Atomic Physics.
- Mason, Grant W. (1970) Ph.D., University of Utah, 1969. Plasma Physics.
- McNamara, D. Harold (1955) Ph.D., University of California, Berkeley, 1950. Astrophysics.
- Merrill, John J. (1971) Ph.D., California Institute of Technology, 1960. Instructional Design.

- Nelson, H. Mark (1959) Ph.D., Harvard University, 1960. Solid-State Physics.
- Palmer, E. Paul (1966) Ph.D., University of Utah, 1956. Acoustics.
- Rasband, S. Neil (1972) Ph.D., University of Utah, 1969. Plasmas, Theoretical Physics.
- Strong, William J. (1967) Ph.D., Massachusetts Institute of Technology, 1964. Acoustics.
- Vanfleet, Howard B. (1960) Ph.D., University of Utah, 1961. Solid-State Physics.

Associate Professors

- Allred, David D. (1987) Ph.D., Princeton University, 1977. Lasers, X Rays.
- Christensen, Clark G. (1972) Ph.D., California Institute of Technology, 1972. Astrophysics.
- Stokes, Harold T. (1981) Ph.D., University of Utah, 1977. Theoretical Solid-State Physics.
- Taylor, Benjamin J. (1980) University of California, Berkeley, 1969. Astrophysics.

Assistant Professors

- Hart, Grant W. (1985) Ph.D., University of Maryland, 1983. Plasmas, Theoretical Physics.
- Jones, Steven E. (1985) Ph.D., Vanderbilt University, 1978. Muon Catalyzed Fusion.
- Rees, Lawrence B. (1986) Ph.D., University of Maryland, 1983. Nuclear Physics.
- Spencer, Ross L. (1984) Ph.D., University of Wisconsin, 1979. Plasmas, Theoretical Physics.

Graduate Programs and Degrees

- Physics (M.S.)
Physics (Ph.D.)
Physics and Astronomy (Ph.D.)

Areas of Specialization

See specialties under degree headings.

The Department of Physics and Astronomy provides an opportunity for inquiring into the nature of the physical world and the laws that govern our universe. Training and perspective for students with a wide range of career objectives, including scientific research, teaching, engineering, business, law, health, and other fields outside science are provided.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

Financial Aid: Qualified graduate students receive financial aid which may take the form of one or more of the following: teaching assistantships, scholarships (including the John Einar Anderson scholarship), internships (university-sponsored fellowships), or tuition awards. The amount of financial aid given depends on individual merit.

PROGRAM AND DEGREE REQUIREMENTS

Physics (M.S.)

The master of science degree is sometimes sought by those who intend to continue on for the Ph.D., but more often it serves as a terminal degree for those who intend to work in industrial or governmental research or teaching.

Specialties: Acoustics, astrophysics, atomic physics and spectroscopy, biophysics, ecological physics, nuclear physics, physics education, planetary and space physics, plasma physics, solid-state physics, and theoretical physics.

Admission and Entry

- I. Application requirements:
 - A. Deadline: February 15 for fall semester admission. This is earlier than the general university deadline.
 - B. Entrance examinations: General GRE and advanced physics subject test.
- II. Prerequisite: Baccalaureate degree in physics or equivalent. Appropriate course work will be suggested by graduate advisor for removing deficiencies in undergraduate study.
- III. Entry time: Fall semester recommended.

Requirements for Degree

- I. Credit hours (30): Minimum 24 approved course work hours including 18 hours of nonrepeatable graduate courses (a repeatable course is one whose number ends in R), plus 6 thesis hours (Phcs. 699R).
- II. Before admission to candidacy, a student must be accepted as a research student by a member of the faculty of the Department of Physics and Astronomy and must submit a proposed study list. This is normally completed at the beginning of the first semester of the first year of graduate study.
- III. Required course: Phcs. 591R (graduate seminar) each semester of residence.
- IV. Thesis.
- V. Examinations: Final oral examination and defense of thesis.

Physics (Ph.D.)

Physics and Astronomy (Ph.D.)

Specialties: Acoustics, astrophysics, atomic physics and spectroscopy, nuclear physics, plasma physics, solid-state physics, theoretical physics.

Admission and Entry

- I. Application requirements:
 - A. Deadline: February 15 for fall semester admission.
 - B. Entrance examinations: General GRE and advanced physics subject test.
- II. Entry times: Fall semester recommended.

Requirements for Degree

- I. Credit hours (66): Minimum of 48 (B- grade or better in each class) hours in approved course work exclusive of graduate seminars (see Phcs. 591R); plus dissertation (18 hours minimum, Phcs. 799R).
- II. Before admission to candidacy, a student must pass the GRE advanced physics subject test with a minimum score of 80 percent, be accepted as a research student by a member of the faculty of the Department of Physics and Astronomy, and submit a proposed study list. The study list is normally completed during the second semester of graduate studies.
- III. Required courses:
 - A. Phcs. 591R each semester of residence.
 - B. For physics degree: Phcs. 517, 518, 621, 641, 642, 651, 652.
 - C. For physics and astronomy degree: Phcs. 517, 518, 527, 528, 621, 651, 652.

- IV. Required courses in specialty: At least 12 hours in that specialty listed below that is most closely related to the field of research to constitute a major and 12 hours in a second specialty to constitute a minor. No duplication between the courses listed below and those listed above is permitted. Students whose research is in acoustics may, with the approval of their committee, construct a 12-hour minor that includes courses outside the department.

- A. Acoustics: Phcs. 561, 562, 565, 566, 623, 631, 681.
- B. Astrophysics: Phcs. 527, 528, 529, 611, 612, 627, 628, 711R.
- C. Atomic physics and spectroscopy: Phcs. 527, 528, 631, 632, 711R.
- D. Nuclear physics: Phcs. 631, 655, 656, 711R, 751, 752.
- E. Plasma physics: Phcs. 536, 537, 545, 546, 623, 631, 632, 645, 646, 711R.
- F. Solid-state physics: Phcs. 623, 631, 681, 682, 711R.
- G. Theoretical physics: Phcs. 617, 618, 625, 626, 632, 711R, 751, 752.
- H. Planetary and space physics: Phcs. 536, 537, 545, 546, 711R.
- I. Physics group for physics and astronomy degree only: Phcs. 536, 537, 625, 626, 645, 646, 655, 656, 711R (6 hours); 631, 652, 641, 642 (6 hours).

- V. Foreign language/Skill requirement: Select any one of the following four options:

- A. Option 1: Single language. Demonstrate a thorough familiarity with French, German, or Russian. An examination will test ability to (1) translate literature in the student's field and (2) communicate orally in the language. In lieu of a special examination, the student can meet this requirement by completing a minimum 22 semester hours in the language chosen with a GPA of B (3.0) or higher. In either case, the language department involved must certify competency.
- B. Option 2: Two languages. Complete one of the following requirements for each language. Acceptable languages are French, German, and Russian.
 1. Take and pass approved intensive reading courses in the language.
 2. Complete 16 semester hours of credit with an average grade of B (3.0) in the language.
- C. Option 3:
 1. Demonstrate competency in reading Russian, French, or German.
 2. Demonstrate competency in the use of computers as they relate to scientific computations comparable to the completion of a 3-hour computer science course.
 3. Complete satisfactorily 6 hours of course work, approved by the advisory committee and selected from:
 - a. Upper-division or graduate mathematics courses (except Math. 434).

- b. Upper-division or graduate statistics or computer science courses emphasizing the use of statistics and computers in the physical sciences.

c. Phcs. 617, 618.

D. Option 4:

- 1. Complete requirements 2 and 3 of Option 3.
- 2. Complete satisfactorily 9 more hours of course work, approved by the advisory committee and selected from the list in requirement 3 of Option 3.

VI. Dissertation.

VII. Examinations:

- A. Comprehensive written examination when next given after completion of required courses. These are regularly scheduled early in September and at other times on reasonable demand.
- B. Comprehensive oral examination and defense of dissertation.

PHYSICS AND ASTRONOMY GRADUATE COURSES

513R. Special Topics in Contemporary Physics. (1–3)

On dem.

Prerequisite: consent of instructor.

Topics generally related to recent developments in physics.

517, 518. Mathematical Physics. (3 ea.) 517, F; 518, W

Prerequisite: Phcs. 318, Math. 434.

Topics in modern theoretical physics, including applications of matrix and tensor analysis and linear differential and integral operators.

527, 528. Introduction to Astrophysics. (3 ea.) 527, F;

528, W

Prerequisite: consent of instructor.

Principles and observational techniques of astrophysics.

529. Observational Astrophysics. (3) On dem.

Prerequisite: Phcs. 527, 528.

Survey of important areas of current research.

536, 537. Space and Planetary Physics. (3 ea.) On dem.

Prerequisite: consent of instructor.

Solar plasmas, planetary atmospheres and interiors, comets, cosmic rays, and space measurement techniques.

545. Introduction to Plasma Physics. (3) Alt. yr.

Prerequisite: Phcs. 321, 431, 441.

Introduction to plasma physics, including single-particle motion and both fluid and kinetic models of plasma behavior.

546. Plasma Transport. (3) Alt. yr.

Prerequisite: Phcs. 545.

Transport processes in plasmas applied to space physics, fusion, and laser plasmas.

551, 552. Modern Physics. (3 ea.) 551, F; 552, W

Prerequisite: Phcs. 222, 318, Math. 434.

Special relativity; analytical foundations of quantum mechanics; applications to atomic, molecular, statistical, solid-state, and nuclear physics; elementary particles.

561. Fundamentals of Acoustics. (3) W

Generation, transmission, and reception of sound. Vibrating systems, properties of elastic media, mechanical and electrical energy, and radiation.

562. Acoustical Measurements. (1–3) On dem.

Prerequisite: completion of or concurrent registration in Phcs. 561.

Selected experiments in acoustics.

565. Acoustics of Music and Speech. (3) On dem.

Prerequisite: Phcs. 561 or consent of instructor.

Sound production and perception, techniques for analysis and synthesis, computer modeling, machine recognition, and ensemble effects.

566. Architectural Acoustics and Noise. (3) On dem.

Prerequisite: Phcs. 561 or consent of instructor.

Computer modeling of enclosures, techniques for measuring noise spectra, room design, noise control.

591R. Colloquium. (0.5) F, W

Required of all graduate students every semester in residence.

611, 612. Astrophysics. (3 ea.) On dem.

Prerequisite: consent of instructor.

Theory of stellar atmospheres and interstellar matter.

617. Advanced Topics in Theoretical Physics. (3) Alt. yr.

Applications of tensor analysis, differential geometry, and differential forms to such topics as mechanics, optics, relativity, and fluid dynamics.

618. Advanced Topics in Theoretical Physics. (3) Alt. yr.

Symmetry principles in quantum physics, emphasizing group theory; applications to solid state physics, nuclear physics, relativity, and quantum field theory.

621. Dynamics. (3) F

Prerequisite: Phcs. 321.

Advanced treatment of classical mechanics, including Lagrange's and Hamilton's equations, rigid body motion, and canonical transformations.

623. Dynamics of Continuous Media. (3) Alt. yr.

Prerequisite: Phcs. 621.

Mechanics of systems with an infinite number of degrees of freedom. Topics include elasticity and hydrodynamics.

625. Theory of Relativity. (3) On dem.

Prerequisite: Phcs. 551, 621.

Review of special relativity; general relativity, with applications to modern astrophysics.

626. Relativistic Astrophysics. (3) On dem.

Prerequisite: Phcs. 625.

Applications of general relativity to modern astrophysics, including gravitational collapse, black holes, cosmological models, gravitational waves, etc.

627, 628. Advanced Topics in Astrophysics. (3 ea.) On dem.

Prerequisite: consent of instructor.

Internal structure of stars; galactic structure.

631, 632. Statistical Mechanics. (3 ea.) Alt. yr.

Prerequisite: Phcs. 431, 551.

Advanced thermodynamics, classical statistical mechanics, quantum statistics, and transport theory.

641, 642. **Mathematical Theory of Electricity and Magnetism.** (3 ea.) 641, F; 642, W
Prerequisite: Phscs. 442.

Advanced electrostatics and magnetostatics, Maxwell's equations and electromagnetic waves, relativistic electrodynamics, radiation theory, and interaction of matter with electromagnetic fields.

645, 646. **Plasma Physics.** (3 ea.) Alt. yr.
Prerequisite: Phscs. 431, 621, 642 for 645; Phscs. 645 for 646.

Plasma state of matter, including a description in terms of both individual particles and fluids, with applications.

651, 652. **Quantum Mechanics.** (3 ea.) 651, F; 652, W
Prerequisite: Phscs. 518, 551.

Nonrelativistic quantum mechanics, with applications.

655, 656. **Nuclear Physics.** (3 ea.) On dem.
Prerequisite: Phscs. 552.

Fundamental properties of nuclei, nuclear forces, nuclear models, electromagnetic properties of nuclei, particle radioactivity, nuclear reactions, and interaction of radiation with matter.

681, 682. **Modern Theory of Solids.** (3 ea.) Alt. yr.
Prerequisite: Phscs. 481, 651.

Quantum theory of solids, emphasizing the unifying principles of symmetry, energy-band theory, dynamics of electrons and of periodic lattices, and cooperative phenomena.

697R. **Research.** (1-6)

699R. **Master's Thesis.** (1-9)

711R. **Advanced Topics in Physics.** (1-3) On dem.
Prerequisite: consent of instructor.

Theoretical and experimental physics. Topics vary.

751, 752. **Advanced Quantum Theory.** (3 ea.) On dem.
Prerequisite: Phscs. 652.

Topics in relativistic quantum mechanics, including quantum field theory.

797R. **Research.** (1-9)

799R. **Doctoral Dissertation.** (1-9)

DEPARTMENT OF STATISTICS

Chairman: Leland J. Hendrix, 222 TMCB, 378-4505
Graduate Coordinator: Del T. Scott, 204 TMCB, 378-7054
Faculty/Specialties

Professors

Bryce, Gale Rex (1972) Ph.D., University of Kentucky, Lexington, 1974. Industrial Quality Improvement.
Carter, Melvin W. (1961) Ph.D., North Carolina State University, Raleigh, 1956. Design and Analysis.
Christensen, Howard B. (1967) Ph.D., North Carolina State University, Raleigh, 1975. Nonparametrics and Sample Design.
Hendrix, Leland J. (1967) Ph.D., Brigham Young University, 1967. Experimental Design, Computer Applications.
Hilton, H. Gill (1962) Ph.D., North Carolina State University, Raleigh, 1962. Experimental Design.

Rencher, Alvin C. (1963) Ph.D., Virginia Polytechnic Institute, 1968. Multivariate Analysis.

Richards, Dale O. (1963) Ph.D., Iowa State University of Science and Technology, 1963. Industrial Statistics, Quality Control, Reliability, Distributions.

Tolley, H. Dennis (1983) Ph.D., University of North Carolina, 1974. Biostatistics, Actuarial Science.

Associate Professors

Beus, Gary B. (1967) Ph.D., Virginia Polytechnic Institute, 1968. Statistical Education, Quality Control.

Scott, Del T. (1977) Ph.D., Pennsylvania State University, 1977. Statistical Computations, Categorical Data Analysis, Linear Models.

Assistant Professors

Adams, L. LaMar (1970) Ph.D., Brigham Young University, 1972. Sample Survey.

Campbell, L. Howard (1962) MBA, University of Utah, 1957. Statistical Education.

Lawson, John S. (1986) Ph.D., Polytechnic Institute of New York, 1984. Industrial Statistics and Experimental Design.

Graduate Program and Degree Statistics (M.S.)

Areas of Specialization

Experimental design applications in science and in industry, health care applications, problems in analysis such as nonorthogonality, large data sets, categorical data, etc.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Statistics (M.S.)

This program is designed to prepare students for work in industry and government or Ph.D. work in statistics.

Admission and Entry

I. Deadlines. University application deadlines apply.

II. Prerequisites:

A. Stat. 321, 322, 341, 341I, 337 or 501; Math. 343, 344; CS 131, 142 or 231; or equivalents to any of these.

B. Students whose native language is not English may be required to take ESL 101 or 102, depending on the outcome of an interview with the department.

III. Entry times: Fall and winter semesters.

Requirements for Degree

I. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (Stat. 699R).

II. Required courses: Stat. 636; 591R each semester; two semesters of 592R; one course from 611, 621, 631, 662, 690R; all of the following courses unless taken as an undergraduate: Stat. 520, 521, 522, 531 (or 534).

III. Minor: Any approved minor.

IV. Thesis.

V. Examinations:

A. A methods qualifying examination (Stat. 222, 322, 336, 337) and a theory qualifying examination (Stat. 321, 322, 520) must be passed before beginning thesis research.

- B. Oral examination on course work.
- C. Oral defense of thesis.

Statistics (M.S. Minor)

Requirements

- I. 9 hours in statistics courses numbered 300 or above except 552 and 554. (A maximum of 3 hours of 300-400 level may apply toward a graduate minor.)
- II. A methods qualifying examination: Stat. 222, 322, 336, 337 or 322, 501, 502.

Statistics (Ph.D. Minor)

Requirements

- I. Stat. 520, 521.
- II. 9 additional hours from statistics courses 500 and above except Stat. 501, 552, 554.
- III. A methods qualifying examination: Stat. 222, 322, 336, 337 or 322, 501, 502; a theory qualifying examination: Stat. 322, 520, 521.

STATISTICS GRADUATE COURSES

501. Statistics for Research Workers 1. (5) F, W, Sp

Prerequisite: Math. 110 or equivalent. Recommended concurrent registration in Stat. 211 and 322.

Probability, estimation, tests of hypotheses, regression, analysis of variance, and nonparametric methods. For natural or social science students.

502. Statistics for Research Workers 2. (5) W, Su

Prerequisite: Stat. 501 or equivalent.

Analysis of covariance, multiple regression, linear models, design of experiments, and sampling. For natural or social science students.

520, 521. Theory of Statistics 1, 2. (3 ea.) F, W

Prerequisite: Math. 344, Stat. 321, 341.

Development of the theory of discrete and continuous distribution functions, including derived sampling distributions; tests of hypotheses, and point and interval estimation.

522. Theory of Linear Models. (4) F

Prerequisite: Stat. 322, 520, Math. 343.

Linear hypotheses, with application to regression and design.

531. Experimental Design. (3) W

Prerequisite: Stat. 337 or 501.

Randomized blocks, Latin squares, factorial designs, fractional replication, confounding, and incomplete blocks.

532. Statistics for Scientists. (3) On dem.

Prerequisite: Math. 215 or 344; Stat. 321 or 361.

Analysis of variance, simple and multiple linear regression, randomized blocks, Latin squares, incomplete block designs, factorial designs, confounding, fractional factorial designs, and response surface methodology.

534. Sampling. (3) F alt. yr.

Prerequisite: Stat. 334, 337, or equivalent.

Estimation in systematic, simple random, stratified, cluster, PPS sampling, and mixtures of these; ratio estimation; sample size determination and principles of sample allocation.

536. Regression Analysis. (3) F

Prerequisite: Stat. 322; 336 or 501.

Multiple regression, introduction to model building and non-linear estimation, examination of residuals, stepwise regression, subset selection procedures, biased estimation, and model validation.

537. Categorical Data Analysis. (3) W

Prerequisite: Stat. 337 or 502.

Analysis of multiway contingency tables with linear and log-linear models using maximum likelihood and minimum modified chi-square estimates as appropriate.

541. Advanced Probability. (3) On dem.

Prerequisite: Math. 215 or 344, Stat. 341.

Advanced combinatorial methods, random walk, Markov chains, and stochastic processes.

545. Stochastic Processes. (3) F

Prerequisite: Stat. 421 or 520.

Development of stationary Gaussian and Poisson processes, including moments correlation and spectral representation. Applications to modulation, Markov processes, mean square estimation, and spectral estimation.

552. Statistical Methods in Education 1. (3) F, W, Sp, Su

Prerequisite: Math. 100 or equivalent.

Measures of central tendency, variability; correlation; simple linear regression; introduction to hypothesis testing and estimation. Computer applications. For majors in education and related fields.

554. Statistical Methods in Education 2. (3) W, Su

Prerequisite: Stat. 552.

Educational computer applications of analysis of variance and covariance, multiple regression, correlation, and nonparametric methods. Introduction to experimental design.

591R. Graduate Seminar in Statistics. (0) F, W

592R. Statistical Consulting. (0.5) F, W

599R. Cooperative Education: Statistics. (2-9) F, W, Sp, Su

Prerequisite: consent of department coordinator.

On-the-job experience. Report required.

611. Multivariate Statistical Methods. (3) W

Prerequisite: Stat. 322; 337 or 502.

Inference about mean vectors and covariance matrices; multivariate analysis of variance and regression; canonical correlation; discriminant analysis; principal component analysis; factor analysis.

621. Advanced Theory of Statistics. (3) On dem.

Prerequisite: Math. 344, Stat. 521.

Theory of estimation, testing hypotheses, multiple regression, and multivariate analysis.

631. Advanced Experimental Design. (3) F alt. yr.

Prerequisite: Stat. 321, 531.

Confounding and fractional replication in general symmetric and asymmetric factorial designs, response surface methods, mixture designs, and optimal designs.

636. Advanced Statistical Methods. (3) F

Prerequisite: Stat. 321, 322; 502 or 531.

Analysis of variance with unequal subclass frequencies, including missing cells; analysis of covariance; orthogonal polynomials; multiple comparisons and related topics.

662. Advanced Industrial Statistics and Reliability. (3)

On dem.

Prerequisite: Stat. 321, 462; Math. 215 or 344.

Sequential sampling, tolerance limits, life testing, and reliability.

690R. Advanced Special Topics. (3)

Prerequisite: consent of instructor.

695R. Readings in Statistics. (1–3)

Prerequisite: departmental approval.

699R. Master's Thesis. (6–9)

Prerequisite: departmental approval.

COLLEGE OF PHYSICAL EDUCATION

Dean: Clayne R. Jensen, Professor, Physical Education—Sports (212 RB)

Associate Dean, Graduate Studies: Elmo Roundy, Professor, Physical Education—Sports (214 RB)

Associate Dean: Jay H. Naylor, Professor, Recreation Management and Youth Leadership (212 RB)

The following academic departments are in the College of Physical Education:

- Health Sciences
- Physical Education—Dance
- Physical Education—Sports
- Recreation Management and Youth Leadership

RESEARCH SUPPORT FACILITIES

Human Performance Research Center

Director: Garth Fisher (116 RB)

The primary purpose of the center is to support both applied and basic research programs of faculty and graduate students on such topics as nutrition and exercise, drugs and exercise, exercise and cardiovascular disease, exercise and weight control, and other contemporary issues in exercise science. Three faculty members work in the center, and a full-time staff person is available to assist with research projects and provide statistical consulting service.

In addition to serving graduate students and faculty in physical education, the center works closely with departments in other colleges on campus—notably in the fields of physiology, nutrition, endocrinology, and biochemistry—to broaden the scope of research projects. Graduate students who use the center pursue M.S. or Ph.D. degrees from their individual departments, with emphasis in such areas of specialization as exercise physiology, motor learning, biomechanics, and corrective and rehabilitative sports medicine.

Laboratories Within the Human Performance Research Center

1. **Auxiliary Classroom and Laboratory.** This facility, which contains numerous pieces of motor learning equipment, is the primary laboratory for motor learning classes and activities.
2. **Body Composition Laboratory and Hydrostatic Tank Room.** This facility contains the necessary equipment for determining body composition parameters accurately and efficiently. Assisted by computers that can determine lung volumes and capacities and calculate body fat levels, the

laboratory and tank room support studies on such subjects as obesity, training effects, and nutritional treatments.

3. **Muscle Biochemistry Laboratory.** This facility contains such sophisticated equipment as a spectrophotometer, metabolic shaker, centrifuge, cryostat, fluorimeter, tissue homogenizer, and other apparatus needed for basic research in exercise biochemistry.
4. **Ergometry Laboratory.** Equipped with a wide variety of devices for measuring work costs both at rest and during work, this laboratory supports research relating to the metabolic costs of various activities—measuring maximum oxidative capacity and evaluating the effects of various training programs on fitness.
5. **Strength Testing and Ergometer Laboratory.** Strength and endurance testing equipment in this laboratory supports research on the effects of different training programs on strength and evaluates strength of any muscle group for any purpose.

Biomechanics Laboratory

Special cameras and other equipment, including a neumatic digitizer for quantitative analysis of motion, are available to assist research in the analysis of performance in sport and dance from a biomechanical perspective.

Learning Resource Center

This center contains eighteen individual study areas for graduate students as well as computer, audio, and video equipment to assist them in their work.

DEPARTMENT OF HEALTH SCIENCES

Chairman: L. McKay Rollins, 213 RB, 378-4428

Graduate Coordinator: Ronald L. Rhodes, 229-H RB, 378-3327

Faculty/Specialties

Professors

- Burgener, O. Robert (1964) Ph.D., University of Utah, 1972. Community Health, Environmental Health.
- Hafen, Brent Q. (1969) Ph.D., Southern Illinois University, 1969. Behavioral Health.
- Heiner, Steven W. (1969) Ed.D., University of Utah, 1969. Gerontology, Social Hygiene.

- Karren, Keith J. (1971) Ph.D., Oregon State University, 1975.
Behavioral Health.
- Rhodes, Ronald L. (1962) Ph.D., Oregon State University,
1971. Health Promotion, Physiology.
- Rollins, L. McKay (1962) Ph.D., University of Utah, 1971.
International Health, Administration.
- Thygerson, Alton L. (1967) Ed.D., Brigham Young University,
1969. Safety and Curriculum, Occupational Health and
Safety.

Associate Professor

- Hurley, D. Richard (1971) Ph.D., Southern Illinois University,
1971. Statistics, Research.

Assistant Professor

- Salazar, Richard D. (1963) Ph.D., Southern Illinois University,
1972. Research Methods.

Graduate Programs and Degrees

- Health Sciences (M.S.)
Health Sciences (M.H.Ed.)
Health Sciences (Ed.D.)

Areas of Specialization

- Community health, health promotion, school health.

General University Requirements

See General Information section of this catalogue for university
requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Health Sciences (M.S.)

Health Sciences (M.H.Ed.)

Admission and Entry

- I. Application requirements.
 - A. Deadlines. University deadlines apply.
 - B. Entrance examination: General GRE; score subject
to review.
 - C. GPA: Minimum of 3.0 for last 60 hours of under-
graduate work.
- II. Prerequisites:
 - A. Baccalaureate degree with a major or minor in com-
munity health, health education, health promotion,
biological sciences, nursing, physical education,
therapeutic recreation, or other allied fields.
 - B. Applicants will be required to satisfy any
deficiencies. Courses taken in doing so will not
count toward the required hours for the degree.

Requirements for Degree

- I. Credit hours:
 - A. Master of Science (M.S.) (31): Minimum 25 course
work hours plus 6 thesis hours (Hlth. 699R).
 - B. Master of Health Education (M.H.Ed.) (34): Mini-
mum 30 course work hours plus 4 project hours
(698R).
- II. Required core courses in all emphases: Stat. 552; Hlth.
650, 651, 692, 694.
- III. Required courses in various emphases:
 - A. Community Health:
M.S.: Hlth. 552, 570, 578, and 6 course work
hours plus 6 thesis hours (699R);
M.H.Ed.: Hlth. 552, 570, 578, and 11 course
work hours plus 4 project hours (698R).

B. School Health:

- M.S.: Hlth. 552, 565, 661; and 6 course work
hours plus 6 thesis hours (699R);
M.H.Ed.: Hlth. 552, 565, 661; and 11 course
work hours plus 4 project hours (698R).

C. Health Promotion:

- M.S.: Hlth. 555, 565, 599R, and 7 course work
hours plus 6 thesis hours (699R);
M.H.Ed.: Hlth. 555, 565, 599R, and 12 course
work hours plus 4 project hours (698R).

- IV. Thesis or project: Hlth. 692 and Stat. 552 should be
taken the first semester or as early as possible in prepara-
tion for the thesis or project.
- V. Examinations:
 - A. Oral defense of thesis (M.S.).
 - B. Oral defense of project and oral examination on
course work (M.H.Ed.).

Health Sciences (Ed.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; score subject
to review.
 - C. GPA: Minimum of 3.5 for last 60 semester hours.
- II. Prerequisites:
 - A. Master's degree in health education or related area.
 - B. Two years of professional experience in a health-
related field such as community health, school
health, health promotion, or nursing
 - C. Resolution of deficiencies.

Requirements for Degree

- I. Credit hours (82 beyond baccalaureate degree or 52
beyond master's degree): Minimum 70 course work
hours beyond baccalaureate degree or 40 course work
hours beyond the master's degree, plus 12 dissertation
hours (Hlth. 799R).
- II. Required courses: Hlth. 525, 552, 650, 651, 692,
694, 799R.
- III. Elective course work as determined in consultation with
advisory committee
- IV. Minor or supporting field: Determined in consultation
with advisory committee.
- V. Competence in statistics, including analysis of variance,
covariance, multiple regression, and correlation.
- VI. Dissertation: Hlth. 692 and Stat. 554 should be taken
as early as possible in preparation for the dissertation.
- VII. Examinations:
 - A. Written comprehensive examination upon comple-
tion of course work.
 - B. Oral defense of dissertation.

HEALTH SCIENCES GRADUATE COURSES

502R. Driver and Safety Education Workshop. (1-7)
Independent Study also.

Current safety education problems.

503R. Health Problems Workshop. (1–7)

Current problems in school and community health.

—Health Education Workshop

—Grant Writing

—Health and Wellness, Screening and Evaluation

—Women's Health

—Fertility, Pregnancy, and Childbirth

—Contemporary Health Issues and Problems

—Adolescent Health Problems

—Alternate Approaches to Health and Wellness

—Marketing and Organizing Conferences, Workshops, and Seminars

—Wilderness Medicine

525. Countermeasures for Accident Control. (2) W

Strategies for preventing and controlling death and injury.

536. Social Hygiene. (2) F, W

Preparing prospective teachers to instruct in family life education as it relates to health. Emphasizes sexual maturation, family health problems, parenthood, and other social hygiene factors.

552. Health Education Program Planning. (2) W

Principles of health education program design, administration, marketing, and evaluation.

555. (Hlth.-PE—S) Management of Health Promotion. (3) F

Management for effectively designing, marketing, implementing, and administering health promotion programs.

561. Health of the Body Systems. (3) F, W, Sp, Su

Prerequisite: Zool. 261.

Advanced course in health problems dealing with the major factors in health and disease as they affect the several body systems.

563. Health and the Aging Process. (2) F, Sp, Su

Independent Study also.

Theories of aging—as a normal process, as a pathological process; health promotion and extension of life.

565. Behavioral Health. (2) W

Applying behavioral principles and techniques related to health promotion.

570. Environmental Health. (2) W

Prevalent environmental hazards as they affect people's health.

578. (Hlth.-HAdm.) Epidemiology for Health. (2) F, W, Sp, Su

Prerequisite: Mbio. 221 or consent of instructor.

Applying analytical tools to the study of acute and chronic disease prerequisite to disease control.

580. International Health. (2) W

Health values, beliefs, and practices of other cultures, emphasizing how these beliefs and practices affect health and well-being.

599R. Cooperative Education. (Arr.) F, W, Sp, Su

Prerequisite: completion of a major in health sciences or graduate student status in health sciences.

On-the-job experience.

650. Review and Processing of Health Information. (3) F, Sp, Su

Source evaluation and content review of contemporary research in health sciences.

651. Community Organization for Health. (2) Sp, Su

Theory and practices in community organization for health. Evaluating group work methods and leadership theories. Field observations required.

661. Curriculum Development and Instructional Design. (2) F, Sp, Su

Design and evaluation of health education curricula.

671. Graduate Practicum. (1) F, W, Sp, Su

Role and functions of the college health teacher. Supervised experience in teaching and research.

692. Research Methods in Health Sciences. (3) F, Sp, Su

Designing, analyzing, and writing research. Focuses on methodological skills.

694. Graduate Seminar in Health Sciences. (2) F, Sp, Su**696R. Independent Studies.** (1–3)**698R. Master's Project.** (4)**699R. Master's Thesis.** (1–9)**796R. Individual Research and Study.** (2–9)**799R. Doctoral Dissertation.** (1–18)

DEPARTMENT OF PHYSICAL EDUCATION—DANCE

Chairman and Graduate Coordinator: Phyllis C. Jacobson,
296 RB, 378-5087

Faculty/Specialties

Professor

Jacobson, Phyllis C. (1957) Ph.D., University of Utah, 1971.
Administration, Physical Fitness.

Associate Professors

Debenham, Hadd Patrick (1976) M.A., University of California, Los Angeles, 1976. Modern Dance, Choreography, Technique, Performance, Musical Dance Theatre.

Ditson, Leslie Allen (1982) M.A., University of California, Los Angeles, 1970. Kinesiology, Modern Dance, Choreography, Theatre Craft, Movement for Theatre.

Gibb, Sara Lee (1965) M.S., Brigham Young University, 1970.
Modern Dance, Dance Education, Pedagogy, History.

Assistant Professors

Allen, Sandra Birch (1969) MFA, University of Utah, 1967.
Baller, Methodology, Technique, History.

Black, Catherine H. (1972) MFA, University of Utah, 1972.

Dance History, Modern Dance, Choreography, Performance.

Davis, Susanne Johnson (1974) M.S., Brigham Young University, 1971. Folk Dance.

Lyman, Emerson S. (1973) Ed.S., University of Utah, 1972.
Ballroom Dance.

Prohosky, Caroline (1986) M.A., University of California, Los Angeles, 1980. Modern Dance, Choreography, Technique, Performance.

Graduate Programs and Degrees

Dance (M.A.)

Analysis of Human Motion (Ed.D.)

Professional Leadership—Dance (Ed.D.)

Areas of Specialization

Choreography and performance, professional leadership, analysis of human motion.

The Department of Physical Education—Dance is made up of four divisions: Ballet, Ballroom, Folk, and Modern. All divisions work cooperatively to provide opportunities for all students at the university to develop their potential in dance.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Dance (M.A.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE, score subject to review.
 - C. GPA: Minimum of 3.0 for the last 60 hours of undergraduate work.
- II. Prerequisite: Baccalaureate degree in dance with knowledge and competencies equivalent to those required in the undergraduate program at Brigham Young University; applicants will be required to satisfy deficiencies.

Requirements for Degree

- I. Thesis option:
 - A. Credit hours (30): Minimum 24 course work hours plus 6 thesis hours (PE—D 699R).
 - B. Required courses (20–21 hours): PE—D 540R or 630R (4 hours), 691 (1 hour), 693R (3 hours), 694R (4 hours); PE—S 630 or RecM. 610 (2–3 hours); plus 4 hours from PE—D 500R, 540R, 555, 562R, 563R, 599R, 638R, 693R, 694R, 695, 797R (1–4 hours).
 - C. Electives (3–4 hours): Selected from graduate courses in any college. For example, anthropology, art, humanities, music, physical education—sports, theatre, or other graduate programs as determined in consultation with advisory committee.
 - D. Minor: Any approved minor.
 - E. Successful periodic reviews of progress.
 - F. Thesis.
 - G. Examination: Oral defense of thesis.
- II. Nonthesis option:
 - A. Credit hours (36): Minimum 36 course work hours.
 - B. Required courses (20–21 hours): PE—D 540R or 630R (4 hours), 691 (1 hour), 693R (3 hours), 694R (4 hours); PE—S 630 or RecM. 610 (2–3 hours); plus 6 hours from PE—D 500R, 555, 562R, 563R, 599R, 630R, 638R, 693R, 694R, 695, 797R (1–4 hours).

- C. Support area (10 hours): Selected from art, humanities, music, physical education—sports, theatre, or other graduate programs in any college.
- D. Electives (5–6 hours): Selected graduate courses, including any course listed above not meeting core requirements.
- E. Successful periodic reviews of progress.

Analysis of Human Motion (Ed.D.)

Professional Leadership—Dance (Ed.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE, score subject to review.
 - C. GPA: Minimum of 3.5 for the last 60 semester hours.
- II. Prerequisites:
 - A. Baccalaureate degree.
 - B. Two years of successful professional experience.

Requirements for Degree

- I. Credit hours (72): Minimum 60 course work hours, plus 12 dissertation hours (PE—D 799R) beyond the baccalaureate degree.
- II. Required courses (46):
 - A. Core courses (40 hours): PE—D 540R or 630R (6 hours); PE—D 691 (1 hour), 693R (4 hours), 694R (8 hours); PE—S 630 (3 hours), 631 (2 hours), 652 (3 hours), 659 (2 hours), 9 hours from PE—D 500R, 555, 562R, 563R, 599R, 638R, 695, 797R.
 - B. Social ethics and values courses (6 hours): Select from PE—S 649, 651, 654, 655, 656, 657.
- III. Supporting field (12 hours): Selected from graduate programs in anthropology, art, educational leadership, educational psychology, humanities, and music.
- IV. Electives: Chosen from graduate programs in any college.
- V. Competency in statistics of at least the level demanded by PE—S 631.
- VI. Successful periodic reviews of progress.
- VII. Dissertation.
- VIII. Examination: Oral defense of dissertation.

PHYSICAL EDUCATION—DANCE GRADUATE COURSES

500R. Workshop in Dance. (1–3) F, W, Su

Experience with Workshop in Dance: ballet, ballroom, folk, modern.

540R. Modern Dance Technique and Theory 5. (2) Su

Advanced technique, with combinations of movement and pattern to further dance as a performing art.

555. Dance Production, Advanced. (2) W alt. yr.

Prerequisite: PE—D 355 or equivalent.

Advanced techniques of producing dance programs for stage and TV.

562R. Modern Dance Composition, Advanced. (1) W alt. yr., Su

Prerequisite: consent of instructor.

Composition, including elements of space, motion, energy, and time.

563R. **Modern Dance Improvisation, Advanced.** (1–2) Su
 599R. **Cooperative Education: Dance Practicum.** (1–6) F, W, Sp, Su

Field experience for teaching and performance in dance.

630R. **Dance Technique, Advanced.** (1–2) F, W

Course designed for higher-level assignment and credit while attending ballet, ballroom, folk, or modern advanced technique course.

638R. **Dance Performance Company.** (2) F, W

Prerequisite: Audition.

Course designed for higher-level credit while attending PE—D 468R, 478R, 488R, 498R.

691. **Seminar.** (1) F

Prerequisite: acceptance into graduate program.

Evaluating students' aptitudes, leadership qualities, and ability to successfully complete a dance graduate program.

693R. **Special Topics in Dance.** (1–2) F, W

Dance-related topics, offered each semester on a rotating basis: aesthetics, creativity, cultural aspects, current trends, criticism, movement analysis, pedagogy, and therapy.

694R. **Dance Theory and Principles.** (2) F, W

Scholarly research on four topics: physical technique, composition, improvisation, and performance. One topic considered each semester on a rotating basis.

695. **Interdiscipline Fine Arts Studio.** (4) F

Interdisciplinary study and experience integrating art, dance, music and theatre (team-taught by faculty of each department).

698R. **Master's Project.** (1–6) F, W, Sp, Su

699R. **Master's Thesis.** (1–9) F, W, Sp, Su

797R. **Individual Research and Composition in Dance.**

(1–9) F, W, Sp, Su

Prerequisite: matriculation for graduate study in dance.

Choreographic projects (faculty approved and supervised) presented to an audience in a concert performance setting.

799R. **Doctoral Dissertation.** (1–18) F, W, Sp, Su

DEPARTMENT OF PHYSICAL EDUCATION—SPORTS

Chairman: Boyd O. Jarman, 221-F RB, 378-6225

Graduate Coordinator: Joyce M. Harrison, 221B-RB, 378-3450

Faculty/Specialties

Professors

Allsen, Philip Edmond (1966) Ed.D., University of Utah, 1965. Exercise Physiology, Physical Fitness.

Call, C. Boyd (1960) Ph.D., University of Oregon, 1967.

Anatomy, Corrective Physical Education, Rehabilitation.

Fisher, A. Garth (1969) Ph.D., University of New Mexico, 1969. Exercise Physiology.

Francis, Rulon S. (1963) Ph.D., University of Utah, 1971.

Anatomy, Corrective Physical Education.

Harrison, Joyce M. (1969) Ed.D., Brigham Young University, 1973. Curriculum and Instructional Design.

Hirst, Cynthia C. (1948) Ph.D., University of Utah, 1974.

Special Education, Facility Management.

Jarman, Boyd O. (1969) Ed.D., University of Oregon, 1965.

Supervision, Facility Management, Legal Liability.

Jensen, Clayne R. (1964) Ed.D., Indiana University, Bloomington, 1963.

Kinesiology, Measurement and Statistics,

Administration.

McGown, Carl M. (1972) Ph.D., University of Oregon, 1971.

Motor Learning.

Roundy, Elmo S. (1963) Ed.D., University of California, Los Angeles, 1965.

Measurement and Evaluation in Exercise Science.

Associate Professors

Barker, Ruel M. (1971) Ed.D., Brigham Young University,

1971. Elementary Physical Education, History of Physical Education.

Clarke, Mark S. (1982) Ed.D., Brigham Young University,

1971. Elementary Physical Education, Motor Development.

Conlee, Robert K. (1977) Ph.D., University of Iowa, 1975.

Exercise Physiology.

Cryer, Walter (1964) Ed.D., Brigham Young University, 1975.

Biomechanics.

Durrant, Earlene (1973) Ed.D., Brigham Young University,

1975. Sports Medicine.

Hall, Larry Thomas (1978) Ph.D., University of Utah, 1976.

Motor Learning.

Jones, J. Richard (1961) Ed.D., University of Northern Colorado, 1967.

Sport Pedagogy, History and Philosophy of Physical Education.

Lewis, Kathryn (1972) Ed.D., Brigham Young University,

1978. Kinesiology, Biomechanics, Administration of Physical Education.

Silvester, L. Jay (1969) Ed.D., Brigham Young University,

1976. Health Promotion, Physical Fitness.

Vickers, Betty J. (1971) Ed.D., Brigham Young University,

1976. History and Philosophy of Physical Education.

Assistant Professors

Blakemore, Connie L. (1978) Ed.D., Temple University, 1984.

Pedagogy, Teacher Supervision.

Chamberlain, Diane (1969) Ed.D., University of Utah, 1984.

Sociology of Sport, Elementary Physical Education.

Poole, R. Craig (1980) Ed.D., University of Utah, 1970.

Sport Psychology.

Graduate Programs and Degrees

Physical Education (M.A.)

Exercise Science and Athletic Training (M.S.)

Physical Education (Ed.D.)

Corrective Physical Education and Rehabilitation (Ph.D.)

Exercise Physiology (Ph.D.)

The Department of Physical Education—Sports has the following graduate program objectives:

1. To provide a scholarly approach to physical education through careful research and rigorous intellectual inquiry.
2. To develop and train qualified professionals in physical education.
3. To develop scholars in physical education who can extend the body of knowledge.

Areas of Specialization

Athletic training, corrective physical education and rehabilitation, curriculum and instruction, exercise physiology, and health promotion. Additional individual specializations are available at the master's level.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Note: A student may not pursue three sequential degrees (baccalaureate, master's, doctorate) nor the equivalent of all degree work (baccalaureate and doctorate, with no master's degree) in the Department of Physical Education at BYU.

Physical Education (M.A.)

The M.A. degree is a 36-hour course work program designed specifically for teachers and coaches who do not wish to engage in a research study as part of the master's degree program.

The M.A. degree program is generally considered to be a terminal degree. A student completing this degree who wishes to go on for a doctorate will be required to write a thesis before writing a dissertation.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; minimum score of 900.
 - C. GPA: Minimum of 3.0 for last 60 semester hours of course work.
 - D. Statement of intent that includes the following:
 1. Applicant's preparation and background for the program to which applying.
 2. Special emphasis applicant desires to pursue.
 3. Basic reasons for applicant's career choice.
 4. Applicant's special qualities and talents that would enhance success.
 5. Professional goals.
 6. Particular reasons for applying to BYU.
 7. Specific duration for accomplishing graduate degree.
 8. Any specific circumstances or objectives applicant wishes to be considered (optional).

- II. Prerequisites:
 - A. Baccalaureate degree in physical education or a related field, including courses in motor learning, kinesiology, exercise physiology, and corrective physical education or athletic training.
 - B. Demonstrated competence in writing, fitness, sport and/or dance skills, and computer use.
- III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Credit hours (36): Minimum 36 course work hours.
- II. Required courses: PE—S 568, 580, 630, 631, 654, 655, 656, 657, 659, 662, 691.
- III. Electives: 13 hours, including at least two courses in an area of interest. Undergraduate courses in the department may not apply toward a graduate degree. Limit of 4 hours of internship credit. Workshops or coaching clinics will not apply.
- IV. Minor: 9 hours in any approved field.
- V. Examination: Comprehensive examination.

Exercise Science and Athletic Training (M.S.)

Candidates who have a scholarly interest in the scientific or historical aspects of physical education are encouraged to pursue this degree.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; minimum score of 900.
 - C. GPA: Minimum of 3.0 for last 60 semester hours.
 - D. Statement of intent: See description under Physical Education (M.A.) requirements above.
- II. Prerequisites: See description under Physical Education (M.A.).
- III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Credit hours (30–36): Minimum 30 course work hours plus 6 thesis hours (PE—S 699R).
- II. Required courses:
 - A. Health Promotion Option (36): PE—S 555, 599R (9 hours); 630, 631, 666, 667, 669, 691, 699R (6 hours); Hlth. 561; 3 elective hours from PE—S 558, 561, 562, 564, 568, 653, Hlth. 463 or HAdm. 650.
 - B. Athletic Training Option (36): PE—S 558, 561, 562, 564, 565, 566, 568, 630, 631, 666, 667, 691, 693R, 699R (6 hours).
 - C. Individual Specialization Option (30): PE—S 630, 631, 666, 667, 691, 699R (6 hours); 14 elective hours selected in consultation with advisory committee. Hist. 200 is required for students writing an historical study (credit is not counted toward the degree). An internship may be taken in addition to the above requirements.
- III. Minor: Any approved minor.
- IV. Thesis.
- V. Examination: Oral defense of thesis and examination of course work.

Physical Education (Ed.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; minimum score of 1000.
 - C. GPA: Minimum of 3.5 for last 60 hours of course work.
 - D. Statement of intent that includes the following:
 1. Applicant's preparation and background for the program.
 2. Special emphasis applicant desires to pursue.
 3. Basic reasons for applicant's career choice.
 4. Applicant's special qualities and talents that would enhance success.
 5. Professional goals.
 6. Particular reasons for applying to BYU.
 7. Specific duration for accomplishing graduate degree.
 8. Any specific circumstances or objectives applicant wishes to be considered (optional).
- II. Prerequisites:
 - A. Master's degree in physical education or equivalent.

- B. Demonstrated competence in writing, speaking, fitness, sport and/or dance skills, and computer use.
- C. Two years of successful professional experience.
- D. PE—S 797R for candidates who have not written a thesis. These candidates must produce a publishable research manuscript, before beginning work on a dissertation. (This is a prerequisite and will not count toward the 85 hours.)

III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Credit hours (85 beyond baccalaureate degree): Minimum 85 hours beyond baccalaureate degree (at least 40 of which must be at BYU), including 6–9 internship hours (PE—S 599R), and 12 dissertation hours (799R).
- II. Required core courses: PE—S 568, 580, 630, 654, 655, 656, 657, 659, 662, 691, 693R; Stat. 501, 502; computer literacy.
- III. Required courses for specializations: A majority of the work in the area of specialization must be taken at BYU.
 - A. Curriculum and Instruction: PE—S 649, 651, 658, 755; ELDR or EPsy. 652 or EPsy. 501 and EPsy. 620 or EPsy. 601; 20 hours of supporting course work (12 hours must be outside the Department of Physical Education—Sports).
 - B. Exercise Science: PE—S 560, 561, 666, 667, 669; 22 hours supporting course work (12 hours must be outside the College of Physical Education).
 - C. Instruction and Exercise Science: PE—S 560, 561, 649, 651, 658, 666, 667, 669, 755; ELDR or EPsy. 652 or EPsy. 501; 10 hours supporting course work outside the Department of Physical Education—Sports.
- IV. Minor: Any approved minor.
- V. Dissertation.
- VI. Examinations:
 - A. Comprehensive examination.
 - B. Oral defense of dissertation.

Exercise Physiology (Ph.D.)

Corrective Physical Education (Ph.D.)

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: General GRE; minimum score of 1000.
 - C. GPA: Minimum of 3.5 for last 60 hours.
 - D. Statement of intent: See description under Physical Education (Ed.D.).
- II. Prerequisites:
 - A. Baccalaureate degree in physical education or related field, with competence in the following areas:
 - 1. Measurement and evaluation (equivalent to PE—S 360).
 - 2. Motor learning (equivalent to PE—S 361).
 - 3. Kinesiology and biomechanics (equivalent to PE—S 362).
 - 4. Physiology of activity (equivalent to PE—S 363).

- 5. Adaptive and corrective physical education (equivalent to PE—S 460).

B. Completion of courses in the foundational sciences equivalent to the following:

- 1. College mathematics through calculus (equivalent to Math. 110, 119).
- 2. College physics (equivalent to Phscs. 105, 106).
- 3. College chemistry through organic chemistry (equivalent to Chem. 105, 106, 107, 351, 352, 353).
- 4. Anatomy and upper-division physiology (equivalent to Zool. 260, 460).

III. Entry times: Fall semester and summer term only.

Requirements for Degree

- I. Credit hours (78): Minimum of 60 course work hours beyond baccalaureate degree, plus 18 dissertation hours (PE—S 799R) and the skill requirement.
- II. Required core courses:
 - A. Exercise Physiology: PE—S 561, 568, 630, 659, 662, 666, 667, 669, 671, 691, 693R, 766, 767, 768, 769, 797R.
 - B. Corrective Physical Education: PE—S 550, 560, 561, 582, 599R, 630, 659, 662, 663, 666, 667, 669, 691, 797R.
- III. Supporting field: 20 hours required.
 - A. Exercise Physiology: Chem. 481, 584; Zool. 565, 566, 662R; 7 additional approved hours.
 - B. Corrective Physical Education: 20 hours from Hlth. 561, RecM. 470, 475, Psych. 342, 370, 535, 580, FamSc. 514, Zool. 560, 584, FSN 435.
- IV. Electives: Choose from graduate courses in physical education and related fields.
- V. Minor: Approved minors related to field of emphasis.
- VI. Skill requirement: Consult department.
- VII. Dissertation.
- VIII. Examinations:
 - A. Comprehensive examination.
 - B. Oral defense of dissertation.

Program and Degree Resources

- 1. Anatomy: Five cadavers and skeletons.
- 2. Biomechanics: Video replay analysis, force test table with cable tensiometers, Cybex II, digitizer and IBM computer, and high-speed cinematographic equipment.
- 3. Exercise biochemistry: Biochemical analysis, muscle histology, and muscle biopsy equipment and facilities.
- 4. Human performance: Treadmills, bicycle ergometers, hydrostatic weighing facility, breath-by-breath VO_2 analysis system, EKG units, and Cybex.
- 5. Small animal facility: 200 animal cages, rodent treadmill, tissue traumatizer, and separation force instrument.
- 6. Athletic training: Two large, well-equipped facilities with three satellite training rooms located in the Marriott Center and football stadium.
- 7. Motor learning: Basic equipment used for laboratory associated with motor learning classes. Devices for measuring learning, speed of movement, and reaction time.

**PHYSICAL EDUCATION—SPORTS
GRADUATE COURSES**

550. Motor Development and Growth of Children. (2) W

Existing body of knowledge regarding motor development of children and significance of physical activity in early childhood.

555. (PE—S-Hlth.) Management of Health Promotion. (3) F

Management for effectively designing, marketing, implementing, and administering health promotion programs.

558. Physical Education—Athletics, Sport, and the Law. (2)

Detailed analysis of legal liabilities and issues relative to supervising physical education, recreation, and athletic programs.

560. Advanced Corrective Physical Education. (2) W
Prerequisite: PE—S 460.

Techniques of postural evaluation, muscle testing, therapeutic exercises, and relaxation; extent and limitations of the physical educator's responsibility for recognizing divergent conditions; referral procedures.

561. Functional Anatomy and Kinesiology. (4)

Prerequisite: PE—S 362, 363, 460, or equivalent.

Study of human anatomy with adaptation to basic kinesiological principles and procedures.

562. Advanced Athletic Training. (3) W

Prerequisite: PE—S 462.

Advanced theory and practical skills in prevention, immediate care, and treatment of injuries.

563R. Athletic Training Practicum. (1–6) F, W, Sp, Su

Prerequisite: PE—S 462, 562, and consent of advisor

Academic and practical application of athletic training skills in the training room setting.

564. Physical Examination and Rehabilitation of Athletic Injuries. (2) W

Prerequisite: PE—S 363, 460, 462, 560, 562.

For athletic training students. Specific rehabilitation programs for specific injuries; examining the injury.

565. Therapeutic Modalities in the Treatment of Athletic Injuries. (2)

Prerequisite: PE—S 363, 462, 562.

For athletic training students. Hydrotherapy, massage, traction, radiant energy, heat, cold, and electrotherapy.

566. Orthopedics in Sports Medicine. (3)

Prerequisite: PE—S 460, 462, 562, 563, 660.

For athletic training students. Orthopedics of the injured athlete.

568. Problems in Conditioning. (2) F, W

Prerequisite: PE—S 363.

Application of scientific principles to problems in conditioning.

580. Sport Pedagogy. (2) F

Theoretical and practical aspects of teaching physical education.

582. Physical Education for the Mentally Retarded. (2) F

Prerequisite: baccalaureate degree in physical education.

Theoretical and practical aspects of teaching the mentally retarded child and adult.

586R. Workshop in Fitness and Sport. (1–4) F, W

Prerequisite: undergraduate major in physical education or equivalent.

599R. Practicum. (1–9) F, W, Sp, Su

Prerequisite: PE—S 568 or concurrent registration for conditioning coaches.

Field experience for physical education or recreation students. Fifty hours of volunteer service in approved organization required per credit hour

630. Research Methods in Physical Education. (3) F

Prerequisite: PE—S 360 or equivalent.

Understanding, designing, and conducting research; writing for publication in physical education.

631. Research Design in Physical Education. (2) W

Prerequisite: PE—S 360 or equivalent.

Designing, conducting, and analyzing data for experimental and survey research studies in physical education using standard statistical procedures.

649. Curriculum Design in Physical Education. (2)

Theoretical and practical aspects of curriculum design in physical education.

651. Supervision in Physical Education. (2) F

Theory and practice of successful supervision in physical education.

652. Administration and Public Relations. (3) F

Administration and management of physical education, athletic, and related programs and the role of public relations in these programs.

653. Planning Facilities. (2)

Planning facilities for school and community physical education and recreation programs.

654. History of Physical Education. (3)

Review and analysis of historical facts and events in physical education and sport.

655. Philosophy: Ethics and Issues. (2)

Ethical and moral interpretations and concepts underlying the profession.

656. Psychological Implications of Sport. (2)

Prerequisite: graduate standing; Psych. 111, PE—S 450, or equivalent.

Review of the psychological phenomena inherent in sport as they relate to the teacher/coach, participant, and spectator.

657. Sport and Society. (2)

Prerequisite: PE—S 450 or equivalent.

Relationship of sport to other elements of society, emphasizing the twentieth century.

658. Instructional Design in Physical Education. (2)

Prerequisite: PE—S 580, 659.

Systematic approach to designing and evaluating cognitive, psychomotor, and affective instruction in physical education.

659. Theory of Motor Learning. (2)

Prerequisite: PE—S 361.

Theories and methods of learning physical skills.

662. Mechanical Analysis of Activities. (2)

Prerequisite: PE—S 362.

Analysis of the mechanics of movement in sport, dance, and athletic activities in order to identify the means of achieving the highest degree of skill possible in each activity.

663. Research Techniques in Biomechanics of Sport. (2)

Prerequisite: PE—S 362, 662.

Theory and practice of the following research techniques in biomechanics: statics, dynamics, body segment parameters, photoinstrumentation, electronic instrumentation, digital computer techniques, literature sources, and laboratory fundamentals.

666. Advanced Physiology of Activity. (2)

Prerequisite: PE—S 362, 363, and consent of instructor.

Adjustments made by the body to physiological stress.

667. Laboratory Methods and Procedures. (2)

Prerequisite: PE—S 363, 666 or concurrent enrollment in PE—S 666.

Basic techniques and procedures used in human performance laboratories.

669. Exercise, Testing, and Prescription in Coronary Heart Disease. (2)

Prerequisite: PE—S 666, 667.

In-depth study of coronary heart disease: the risk factors, symptoms, and interventions; and the role of exercise in testing, prescription, and rehabilitation.

671. Exercise Biochemistry Laboratory. (2)

Prerequisite: PE—S 666, Chem. 481, and consent of instructor.

Weekly laboratory experiments involving use of equipment and procedures related to exercise biochemistry.

685. Physical Education in the Elementary School. (2)

For teachers, administrators, and supervisors. Curricular interrelationships and content materials in obtaining educational results.

691. Seminar. (1) F, Su

Prerequisite: acceptance into graduate program.

Evaluation of students' aptitudes, leadership qualities, and ability to successfully complete a physical education graduate program.

693R. Graduate Seminar in Readings. (1) F, W

Prerequisite: PE—S 666 or concurrent registration in exercise physiology section.

Weekly seminar covering selected topics in physical education. Doctoral students in exercise physiology should enroll each semester. Ed. D. students must enroll for a minimum of two semesters. Master's degree students are invited but not required to attend.

698R. Master's Project. (1–6) F, W, Sp, Su

699R. Master's Thesis. (1–9) F, W, Sp, Su

755. Research on Teaching and Teacher Evaluation in Physical Education. (2)

Prerequisite: PE—S 659.

Review of research on teaching and teacher evaluation impact on the teaching and administration of physical education.

766. Advanced Exercise Physiology: Cardiovascular. (2)

Prerequisite: PE—S 666.

Function of cardiovascular system during exercise; relationship between central and peripheral factors as they relate to blood circulation.

767. Advanced Exercise Physiology: Environmental. (2)

Prerequisite: PE—S 666.

Relationship of various environmental factors and human performance.

768. Advanced Exercise Physiology: Substrate Metabolism. (2)

Prerequisite: PE—S 666.

How skeletal muscle meets its metabolic energy demands in response to acute and chronic exercise.

769. Advanced Exercise Physiology: Skeletal Muscle. (2) F

Prerequisite: PE—S 666.

Physiological, anatomical, and morphological adaptation of skeletal muscle to exercise training.

797R. Individual Research and Study in Physical Education. (2–9) F, W, Sp, Su

Prerequisite: undergraduate major in physical education; matriculation for graduate study in the department.

799R. Doctoral Dissertation. (1–18) F, W, Sp, Su

DEPARTMENT OF RECREATION MANAGEMENT AND YOUTH LEADERSHIP

Chairman and Graduate Coordinator: Howard R. Gray,
273-C RB, 378-4369

Faculty/Specialties

Professors

deHoyos, Benjamin F. (1961) Ph.D., University of Utah,
1969. Research.

Gray, Howard R. (1979) Ph.D., Pennsylvania State University,
1977. Therapy, Gerontology, Research.

Hafen, William J. (1954) Ed.D., University of Utah, 1968.
Administration.

Naylor, Jay H. (1959) Ed.D., University of Utah, 1973.
Administration.

Thorstenson, Clark T. (1969) Ph.D., University of Utah, 1969.
Therapeutic Recreation.

Associate Professors

Catherall, Thomas S. (1971) Ed.D., Brigham Young University, 1980. Youth Research.

Olsen, Burton K. (1965) Ph.D., University of Minnesota, Minneapolis, 1970. Community School.

Skinner, Rulon Dean (1969) M.A., Brigham Young University,
1971. Youth Leadership.

Assistant Professor

Palmer, Gary K. (1968) Ed.D., Brigham Young University,
1981. Community Research.

Graduate Programs and Degrees

Recreation Management and Youth Leadership (M.A.)

Community School Leadership (M.A.)

Therapeutic Recreation (M.A.)

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Recreation Management and Youth Leadership (M.A.)

Community School Leadership (M.A.)

Therapeutic Recreation (M.A.)

Admission and Entry

- I. Application Requirements:
 - A. Deadlines: University application deadlines apply.
 - B. GPA: Minimum of 3.0 for last 60 semester hours of undergraduate work.
- II. Prerequisite: Undergraduate major or minor in recreation or youth leadership. Applicants with other backgrounds may be admitted provisionally but must complete selected prerequisite classes.

Requirements for Degree

- I. Credit hours:
 - A. Thesis option (30): 24 course work hours plus 6 thesis hours (RecM 699R).
 - B. Internship option (36): 28 course work hours plus 8 internship hours (RecM 599R).
- II. Required courses: Determined in consultation with advisory committee.
- III. Minor: Any approved minor.
- IV. Thesis or internship.
- V. Examination: Oral defense of thesis for thesis option candidates.

RECREATION MANAGEMENT

GRADUATE COURSES

520R. Advanced Outdoor Recreation Experiences. (2) F, W

Training in a wilderness setting. Maximum of 4 credit hours.

523. Management of Outdoor Systems. (2) F, W

Administering camps and outdoor programs; site selection and development; program planning and staffing.

570. Aging and Leisure. (2) F, W

Independent Study also.

Understanding recreation and leisure services for the aging and aged in both community and institutional settings.

582. Recreation Facility Planning. (2) F, W, Sp

Developing facilities for public and private recreation programs.

583. Park Planning and Development. (2) F, W

585. The Community Education Philosophy. (2) F, W, Su

Independent Study also.

History, organization, funding, leadership, facilities, and value of the community school.

586. Financial Management for Recreation. (2) F, W, Su

How to finance programs and facilities.

599R. Internship. (1-9) F, W, Sp, Su

Prerequisite: consent of instructor.

Professional leadership practicum.

610. Research Methods in Recreation. (3) F, W, Su

Preparing research proposals and guidelines for thesis writing.

611. Philosophical Foundations in Recreation. (2) F, W, Su

Historical, cultural, and philosophical foundations of leisure and recreation from the contemporary perspective.

612. Applied Research Techniques. (2) F, W, Su

Statistical tests in recreation management and youth leadership, interpreting statistical data, and computerizing statistical research.

615. Process Facilitation in Recreation. (2) F, W, Su

Identifying and applying various functions and roles of the recreation process facilitator.

619. Needs Assessment in Community Planning. (3)

F, W, Su

Prerequisite: RecM 610.

On-location data analysis and scientific report writing of a professional project.

650R. Seminar in Problems. (1-2) F, W, Su

Problems peculiar to the professional. Maximum of 4 credit hours.

680. Public Relations and Communications in Recreation Management. (2) F

Solving human relations problems in recreation management.

685. Community Education Administration. (2) F, Su

Administrative problems of leadership, organization, finance, legal aspects, and public relations.

694. Readings in Recreation Literature and Research. (2)

F, W, Su

Readings from professional literature; group discussion.

699R. Master's Thesis. (1-9) F, W, Sp, Su

YOUTH LEADERSHIP GRADUATE COURSES

560R. Staff Management. (2) F, W, Sp

Developing executive management techniques in agency work.

561R. Agency Management. (2) F, W, Sp

Management techniques of agency programs: Managing agency activities and summer programs, managing the national agency program.

RELIGIOUS EDUCATION

Dean: Robert J. Matthews, Professor, Ancient Scripture
(144 JSB)

DEPARTMENTS OF ANCIENT SCRIPTURE AND CHURCH HISTORY AND DOCTRINE

Chairmen: Ancient Scripture: George A. Horton, Jr.,
124 JSB, 378-2067

Church History and Doctrine: Keith W. Perkins,
124 JSB, 378-3691

The Department of Ancient Scripture and the Department of Church History and Doctrine offer graduate minors, but not majors. See the BYU General Catalogue for faculty listings.

Graduate Programs

Ancient Scripture Minor

Church History and Doctrine Minor

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM REQUIREMENTS

Ancient Scripture Minor

Areas of Specialization: Book of Mormon, Old Testament, New Testament, and Pearl of Great Price.

- I. Credit hours:
 - A. Master's level: An approved 9 hours, 2 hours of which may be readings courses.
 - B. Doctoral level: Number of hours determined in consultation with major department chairman, but minimum is 12.
- II. Required courses: Determined with approval of Ancient Scripture department chairman. Courses in biblical languages such as Heb. 331 and 531 or Greek 411, 612, and 613 that could strengthen a graduate minor in ancient scripture. Such courses would be in addition to the minimum hours required in religion.
- III. Advisory committee: Must include one member from Ancient Scripture faculty.
- IV. Credit limitation: No undergraduate credit may apply.

Church History and Doctrine Minor

Areas of Specialization: Christian history, Doctrine and Covenants, LDS history, LDS doctrine, and world religions.

- I. Prerequisites: RelC. 341, 342, 343, or equivalent knowledge of *Comprehensive History of the Church*, by B. H. Roberts.

- II. Credit hours:
 - A. Master's level: An approved 9 hours.
 - B. Doctoral level: Number of hours determined in consultation with major department chairman, but minimum is 12.
- III. Required courses: Determined with approval of Church History and Doctrine department chairman.
- IV. Advisory committee: Must include one member from Church History and Doctrine faculty.
- V. Credit limitation: No undergraduate credit may apply.

PROGRAM AND DEGREE RESOURCES

Religious Studies Center (156 JSB)

The dean of Religious Education is also the general director of the Religious Studies Center, which promotes research in ancient studies, Bible, Book of Mormon, LDS Church history, Doctrine and Covenants, Pearl of Great Price, and world religions.

The center is a supporting and coordinating agency for religion-oriented research throughout the university. Concentrating on research, writing, and other scholarly activities, it is not involved in classroom instruction or degree programs.

The Richard L. Evans Chair of Christian Understanding

Truman G. Madsen, Professor of Philosophy, 165 JSB

The occupant of the Richard L. Evans Chair of Christian Understanding promotes understanding among people of different faiths through teaching and other activities centered in Jesus Christ. The chair was established to articulate to a broad audience the Christ-centered values to which Elder Evans dedicated his life and to promote an enlightening exchange among Latter-day Saints, members of other faiths, and people of good will everywhere.

ANCIENT SCRIPTURE GRADUATE COURSES

501. Analysis of the Old Testament: The Pentateuch and Historical Books. (3)
502. Analysis of the Old Testament: Prophetic Books. (2)
503. Analysis of the Old Testament: Poetic and Wisdom Literature. (2)
- 510R. Special Topics in Ancient Scripture. (2–3)
Prerequisite: seminary and institute personnel only. Cannot apply to a graduate degree.
511. The Gospels. (2)

512. Paul's Life and Letters. (2)
513. The General Epistles and Revelation. (2)
514. Historical Background of the New Testament. (2)
521, 522. Analysis of the Book of Mormon. (3 ea.)
523. External Evidence of the Book of Mormon. (2)
527. History and Doctrines of the Pearl of Great Price. (3)
606. The Apocrypha and Pseudepigrapha. (2)
610R. Graduate Seminar in Ancient Scripture (1–3)
620R. Directed Readings in Ancient Scripture. (1–3)
Prerequisite: graduate standing

CHURCH HISTORY AND DOCTRINE GRADUATE COURSES

- 524, 525. Analysis of the Doctrine and Covenants. (3 ea.)
530. LDS Doctrine. (2)
540R. Special Topics in Church History and Doctrine.
(2–3)
Independent Study available to commissioned and prospective
chaplains only.
Topics include Joseph Smith's thought, Church doctrine,
schismatic movements in Church history, historical setting of
the Restoration, comparative American religions, Near Eastern
religions, etc.
541. Documents of LDS Church History (1805–1844). (3)
542. Documents of LDS Church History (1844–1900). (3)
543. Documents of LDS Church History (Twentieth
Century). (3)
551. History of the Early Church Through the Fourth
Century. (3)
552. Medieval and Reformation Christianity. (3)
553. History of the Christian Church Since the
Seventeenth Century. (3)
555. Comparative World Religions. (2)
556. Comparative World Religions. (2)
640R. Graduate Seminar in Church History and Doctrine.
(1–3)
Topics include the Doctrine and Covenants, LDS Church
history, LDS doctrine, Christian history, Christian theology,
world religions, etc.
650R. Directed Readings in Church History and Doctrine.
(1–3) F, W, Sp, Su
Prerequisite: graduate standing and consent of instructor.
Topics include the Doctrine and Covenants, LDS Church
history, LDS doctrine, Christian history, Christian theology,
world religions, etc.

SCHOOL OF MANAGEMENT

Dean: Paul H. Thompson, Professor, Organizational Behavior (730 TNRB)

Associate Dean, College of Business: Gary F. McKinnon, Professor, Institute of Business Management (730 TNRB)

Associate Dean, Graduate School of Management: Lee H. Radebaugh, Professor, School of Accountancy (730 TNRB)

The School of Management is composed of the College of Business and the Graduate School of Management. Two departments in the College of Business offer graduate programs:

Information Management
Managerial Economics

The Graduate School of Management is composed of four professional programs:

Master of Business Administration
Master of Public Administration
Master of Accountancy
Master of Organizational Behavior

The BYU School of Management is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication, and they fill leadership positions in a number of national professional organizations. The school has developed innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice.

The programs in the Graduate School of Management are designed to prepare qualified students for rewarding careers in management and administration. Classes and study group activities stress the acquisition of professional managerial attributes that will enable students to obtain positions of leadership in public, private, and not-for-profit organizations.

The Graduate School of Management publishes its own bulletin describing programs in detail. Prospective applicants should write directly to the dean's office to obtain a copy.

Admissions

Applicants to programs in the Graduate School of Management are carefully evaluated in four areas: (1) previous academic performance, (2) completion of a bachelor's degree, (3) test scores on the Graduate Management Admission Test, and (4) work experience, extracurricular activities, leadership potential, motivation, and maturity.

Admission to the MBA and MPA programs is granted only for fall semester. All parts of the application must be completed

and received by Graduate Admissions (B-356 ASB) by the deadline, including the nonrefundable \$30 application fee.

Application deadline: June 15

International student deadline: April 15

Financial aid deadline: February 15

Early application increases the chance of acceptance. Consult the Graduate School of Management Bulletin for application deadlines for the MOB and M.Acc. programs.

Tuition and Fees, Financial Aid

Since Brigham Young University and the School of Management are supported by the tithes of members of the supporting church, students and the families of students who are tithe-paying members have already made a significant contribution to the university. Therefore, nonmembers are charged a higher tuition rate. The disparity is similar to that between residents and nonresidents in state-supported institutions.

Tuition per semester: \$1,610 LDS Member

\$2,415 Nonmember

Tuition deposit (MBA and MPA): \$50

Financial aid is available to students in a variety of forms, through the GSM Scholarship Fund, private scholarship donations, assistantship awards, and loans. Interested students should inquire in the School of Management and in the university Financial Aid Office.

Special Facilities, Programs, and Activities

Housed in one of the finest facilities of its kind, the School of Management enjoys lecture and seminar rooms, study rooms, and a central atrium extending the full eight floors of the N. Eldon Tanner Building. A computer laboratory and a library working collection are also available in the Tanner Building.

School of Management National Advisory Council

Consisting of 75 to 80 prominent business and government executives, the National Advisory Council lends major support to the Graduate School of Management. Students benefit by interacting with council members in special campus lectures and seminars and by visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.

Executives on Campus Program

This program gives students an opportunity to interact with distinguished business and government leaders who come to campus. These executives visit classes and meet with student organizations as well as participate in the Executive Lecture Series.

In addition to the opportunities described above, students participate in intensive career-assessment and development workshops and in a number of student organizations, notably the MBA Association, the MPA Association, the MHA Association, Beta Alpha Psi, and the National Network of Graduate Business School Women. There are also several organizations for spouses of married students.

ENGINEERING/TECHNOLOGY MANAGEMENT DEGREE PROGRAMS

See the College of Engineering and Technology for more details concerning the master of engineering management and the master of technology programs.

COURSES FOR MASTER OF ENGINEERING MANAGEMENT AND MASTER OF TECHNOLOGY MANAGEMENT

- 501. Managerial Accounting. (3) F
- 511. Managerial Finance. (3) W
- 541. Marketing Management. (3) W
- 551. Organizational Behavior. (3) F, Su
- 561. Operations Management. (3) F
- 562. Project Management. (3) F, W, Sp
- 565. Written and Oral Communication. (2)

DEPARTMENT OF INFORMATION MANAGEMENT

Chairman: William H. Baker, 590 TNRB, 378-4081
Graduate Coordinator: Harold T. Smith, 570 TNRB,
378-2405

The Department of Information Management does not offer a graduate degree but offers the following graduate courses. Refer to the BYU General Catalogue for faculty listings.

- 520. Advanced Business Communication Seminar. (3) F, W on dem.

Theory and application of oral and written communication skills required in business and government. Includes analysis, strategy, and presentation.

- 575. Information Systems Management. (3) F, W, Sp, Su on dem.

Prerequisite: acceptance to a School of Management major; IM 437. Recommended: IM 433, 460.

Managing information systems, including project management, strategic planning, organization, control, and measurement.

- 590R. Seminar in Information Management. (1-3) F, W, Sp, Su on dem.

Intensive seminar emphasizing current thought in selected information management topics.

- 599R. Business Internship. (2-3) F, W, Sp, Su

Prerequisite: completion of most major requirements and consent of internship director.

On-the-job information analysis, training, and management experience.

- 605. Introduction to Research in Business. (3) F, W, Sp, Su on dem.

Research methods and analysis of methodology in existing research in business and information management.

- 635. Applications of Recent Research. (3) F, W, Sp, Su on dem.

Application of current research in administrative management and information management.

- 641. Communication for Professional Accounting 1. (1) F, Sp, Su

Prerequisite: IM 320.

Theory and application of written and oral communication for professional accounting.

- 642. Communication for Professional Accounting 2. (1) F, W, Sp, Su

Prerequisite: IM 641.

Continuation of IM 641.

- 643. Communication for Professional Accounting 3. (0.5) F, W, Sp, Su

Prerequisite: IM 641, 642.

Continuation of IM 642.

- 670. Team Management and Systems Project. (3) F, W, Sp, Su on dem.

Principles and procedures related to managing systems projects.

- 690R. Master's Seminar. (Arr.) F, W, Sp, Su

- 692. Research Projects. (4) F, W, Sp, Su

- 694R. Independent Readings. (1-6) F, W, Sp, Su

INSTITUTE OF PUBLIC MANAGEMENT AND HEALTH ADMINISTRATION

Director: N. Dale Wright, 760 TNRB, 378-4221

Faculty/Specialties

Professors

Hart, David K. (1983) Ph.D., Claremont Graduate School,
1965. Ethics.

- Henderson, Dee W. (1976) Ph.D., American University, 1973. Organization Development, Human Resource Development, Public Management and Behavior.
- Knighton, Lennis M. (1971) Ph.D., Michigan State University, 1966. Accounting, Finance Performance Evaluation.
- Parsons, Robert J. (1970) Ph.D., University of California, Riverside, 1971. Health Economics.
- Snow, Karl N., Jr. (1962) Ph.D., University of Southern California, 1972. Public Finance and Budgeting.
- Timmins, William M. (1974) Ph.D., University of Utah, 1972. Personnel Administration, Labor Relations, Executive Development.
- Wright, N. Dale (1968) Ph.D., University of Southern California, 1972. Health Services Administration, Organizational Behavior.

Associate Professors

- Buckwalter, Doyle W. (1968) Ph.D., University of Michigan, Ann Arbor, 1968. Urban Management, Public Policy.
- Cornia, Gary C. (1980) Ph.D., Ohio State University, Columbus, 1979. Public Finance and Budgeting.
- Wheeler, Gloria Eileen (1978) Ph.D., University of Michigan, Ann Arbor, 1972. Quantitative Analysis.

Graduate Program and Degree

Master of Public Administration (MPA)

The objective of the Master of Public Administration (MPA) Program, administered through the Institute of Public Management and Health Administration, is to prepare men and women for leadership in the public and not-for-profit sectors. Leadership in this context provides unique opportunities for service to others. Though emphasis is placed on management of government and not-for-profit organizations, many MPA graduates have found their skills to be transferable to the private sector as well.

Executive MPA Program

In addition to the full-time program offered on campus for students entering public administration, the Institute of Public Management and Health Administration also offers an Executive MPA Program, through the Division of Continuing Education, for persons with significant public management experience who desire to pursue the master's degree program through evening school while continuing to work full-time. All courses in the program are offered in the evenings and on Saturdays as a convenience for those who work all day during the week.

JD/MPA Program

The university has approved a joint JD/MPA four-year degree for certain qualified students.

Inquiries regarding the Executive MPA Program and the JD/MPA Program should be directed to the MPA office.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Master of Public Administration (MPA)

See the Graduate School of Management Bulletin for details regarding this particular program.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.

- B. Entrance examination: GMAT; minimum score of 500.
- C. GPA: Minimum of 3.0 on 4.0 scale for last 60 hours.
- D. A general career interest in public management as reflected in the statement of intent.
- II. Prerequisites: Upon acceptance, applicant will be informed of any background deficiencies.
- III. Entry time: Fall semester only.

Requirements for Degree

- I. Credit hours (64): Minimum 64 course work hours.
- II. Required courses:
 - A. Public Administration Environment: PMgt. 610, 681, 682, 684.
 - B. Human Resource Management: PMgt. 640, 641, 643.
 - C. Financial Resources Management: PMgt. 603, 605, 622, 623.
 - D. Decision Making and Analysis: PMgt. 630, 634, 642R, 685.
 - E. Communication: PMgt. 660, 661.
- III. Electives: Determined in consultation with faculty advisor. Some may be taken in other graduate departments.
- IV. Consult Institute of Public Management and Health Administration for additional requirements.

INSTITUTE OF PUBLIC MANAGEMENT AND HEALTH ADMINISTRATION GRADUATE COURSES

Refer to the Graduate School of Management Bulletin for detailed course descriptions.

603. Managerial Accounting. (1-3) F, W
604. Management Cost Analysis. (1-3) W
607. Program Auditing and Evaluation. (3) W
610. Managerial Economics. (3) F
- 619R. Seminar in Economic Analysis. (1-3) F, W
622. Financing Public Services. (3) F
623. Budgeting. (1-3) F, W
625. Debt Management. (3) W
626. Tax Policy and Management. (3) F, W
627. Cash Management and the Investment of Funds. (2) W
- 629R. Seminar in Financial Management. (1-3) F, W
630. Quantitative Analysis. (3) F
634. Computer Concepts for Management. (1-3) F, W
635. Systems Analysis and Design. (3) F, W
638. Research Methods. (3) Sp, Su
640. Personnel Management and Labor Relations. (3) F
641. Management and Organization Development. (3)
- 642R. Management Development Seminar. (0-3) F, W
643. Management Philosophy and Style. (3) W
645. Collective Bargaining. (3) F

646. Labor Contract Management. (3) W
647. Manpower Planning. (3) W
648. Equal Employment Opportunity and Affirmative Action. (2) F, W
649R. Personnel Administration and Organization Behavior Seminar. (1–3) F, W
659R. Seminar in International Management. (1–3) F, W
660. Written Communications. (1–2) F
661. Oral Communications. (1) W
675. Urban Management. (3) W
676. Urban and Regional Planning. (3) F, W
677. Public Works Management. (3) F
Prerequisite: consent of instructor.
678. Intergovernmental Administrative Relations. (1–3) W
679R. Seminar in Local Government Administration. (1–3) F, W
681. Legal Concepts for Managers. (2) F, W
682. Ethics for Management. (3) F, W
684. Public Institutions, Structures and Processes. (3) F
685. Management Strategy and Organization Policy. (3) F, W
688. Business and Government Relations. (3) F, W
689. Public Policy Analysis. (3) F, W
691R. Directed Readings and Conference. (1–3) F, W, Sp, Su
Prerequisite: permission of the department.
692R. Directed Research. (1–3) F, W, Sp, Su
Prerequisite: permission of the department.
693R. Practicum. (1–4) F, W, Sp, Su
Prerequisite: permission of the department

DEPARTMENT OF MANAGERIAL ECONOMICS

Chairman and Graduate Coordinator: Robert G. Crawford,
610-A TNRB, 378-2364

Faculty/Specialties

Professors

- Blood, Dwight M. (1980) Ph.D., University of Michigan,
1958. Micro and Macro Theory; Macro Policy.
Clarke, Darral G. (1985) Ph.D., Purdue University, 1972.
Quantitative Methods; Economic Marketing Analysis, Strategic Planning, and Decision Making.
McDonald, James B. (1972) Ph.D., Purdue University, 1970.
Quantitative Methods, Econometrics.

Associate Professors

- Crawford, Robert G. (1972) Ph.D., Carnegie-Mellon University, 1975. Business Economics.
Koller, Roland H., II (1969) Ph.D., University of Wisconsin, Madison, 1969. Economics, Industrial Organization.
Pritchett, B. Michael (1969) Ph.D., Purdue University, 1970. Quantitative Methods, Econometrics.
Rickenbach, J. Dean (1957) Ph.D., Indiana University, Bloomington, 1963. Business, Microeconomics, Real Estate.

Assistant Professor

- Nelson, Ray D. (1985) Ph.D., University of California, Berkeley, 1981. Speculative Markets, Applied Statistical Modeling, Decision Making Under Uncertainty.

Graduate Program and Degree Managerial Economics (M.S.)

A graduate specialty in managerial economics has proven valuable to several types of students. Among these are: (1) those seeking a distinct specialty as part of a professional degree, such as the MBA, MPA, or law degrees, (2) those seeking positions which require ability to apply economic analysis as well as an awareness of broad economic or management principles, (3) those wishing to strengthen their training before entering (or applying for) a Ph.D. or other graduate program.

Experience in placing graduates suggests that students are well served by a strong (often quantitative) specialty. Nevertheless, such a specialty is often best developed in a context including the study of management, government, and the economy.

Members of the faculty are available to consult with students concerning their careers, degree alternatives, plans of study, and career development.

Of special interest to entering MBA students with an undergraduate degree in economics (or considerable undergraduate training in economics) is the concentration in managerial economics offered in the MBA Program. Qualifying students can waive MBA 510 and 511 and substitute appropriate courses to complete the concentration while obtaining an MBA. Interested students should see the department chairman for further information.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Managerial Economics (M.S.)

This degree emphasizes training in applied economic analysis and specialties. Typical students become especially knowledgeable in model formulation and estimation. They learn forecasting methods and other analytical techniques used in managerial decision making. Graduates are trained in empirical and analytical techniques related to firms, industries, and the national and international economic environment.

Admission and Entry

I. Application requirements:

- A. Deadlines: University deadlines apply.
- B. Entrance examination: GMAT, GRE, or equivalent; score subject to review.
- C. TOEFL or Michigan Test in English required of international students who do not speak English as their first language.

- II. Prerequisites: Intermediate microeconomic and macroeconomic theory, principles of statistics (3 hours), and introductory calculus (3 hours).

Requirements for Degree

- I. Credit hours:
 A. Thesis option (30): Minimum 24 course work hours plus 6 thesis hours (ManEc. 699R).
 B. Project option (33): Minimum 33 course work hours plus a major research project.
 II. Consult department for full program description and additional course requirements.
 III. Examination: Oral defense of thesis or project.

MANAGERIAL ECONOMICS GRADUATE COURSES

501R. Current Managerial Economic Policies and Problems. (1-3) F, W, Sp, Su on dem.
 Prerequisite: consent of instructor.

552. Urban Analysis. (3) W
 Prerequisite: ManEc. 200, 301, or equivalent.
 Applying economic theory to urban problems and policies.

562. Manpower Problems and Policy. (3) W alt. yr.
 Prerequisite: ManEc. 200, 301, or equivalent.
 An analysis of the principles and problems underlying the optimal utilization of manpower.

564. Collective Bargaining. (3) W alt. yr.
 Prerequisite: ManEc. 200, 301, or consent of instructor.
 A practicum in collective bargaining principles and practices.

575. Public Finance. (3) F, W
 Prerequisite: ManEc. 200, 301, or equivalent.
 An analysis of the interaction of governments and the institutions of a market economy. Emphasis is given to tax and revenue policy, evaluation of expenditure policy, and the impact of public decisions on businesses and individuals.

576. Topics in Government and Business. (3) W
 Prerequisite: ManEc. 200, 301, or consent of instructor.
 An in-depth study of either antitrust or public regulation of business (varies with semester).

577. Economics of Health Services. (3) F
 Prerequisite: ManEc. 200 or equivalent or consent of instructor.
 Broad survey of economic literature on production, distribution, supply-demand, and use of health resources.

589R. Mathematical Theory of Managerial Economics. (3) W
 Prerequisite: ManEc. 200, 301, 486, or consent of instructor.
 The mathematics of optimization as applied to economic decisions.

594R. Seminars in Selected Managerial Economics Topics. (1-6) F, W, Sp, Su
 Prerequisite: consent of instructor.
 Seminars covering a variety of topics in economic policy and theory.

595R. Lectures in Managerial Economics. (1-3) F, W, Sp, Su
 Prerequisite: consent of instructor.

596R. Readings in Managerial Economics. (1-3) F, W, Sp, Su
 Prerequisite: consent of instructor.

597R. Research in Managerial Economics. (1-3) F, W, Sp, Su
 Prerequisite: consent of instructor.

610. Advanced Managerial Economics: Theory and Applications. (3) F
 The application of economic principles to a broad range of problems facing management, from the point of view of an economic consultant.

611. National and International Business Environment. (3) W
 The macroeconomy presented at an intermediate level with special attention to the government and international trade sectors.

613. Business and Economic Forecasting: Theory and Applications. (3) W
 An investigation of forecasting methodologies with an emphasis on time series analysis. Practical applications.

615R. Seminar in Managerial Economics. (3) F, W, Sp, Su on dem.
 A course in preparing and presenting economic analysis to line managers.

637R. Seminar in Economic Analysis. (2-3) F, W, Sp, Su on dem.
 Applying economic tools to public problems, with special emphasis on constrained optimization.

688. Applied Econometrics. (3) F
 Prerequisite: ManEc. 200, 301, calculus or equivalent, and a first course in econometrics.
 Econometric techniques and applications.

689. Advanced Econometric Techniques. (3) W
 Prerequisite: ManEc. 688 or Econ. 388.
 A course in advanced econometric techniques such as time series analysis, nonlinear estimation techniques, and simultaneous equation models.

699R. Master's Thesis. (6-9) F, W, Sp, Su

MASTER OF BUSINESS ADMINISTRATION

MBA Program Director: William C. Giauque, 640 TNRB, 378-3500

Faculty/Specialties

Professors

- Andrus, Roman R. (1976) Ph.D., Columbia University, 1965. Marketing.
 Barnes, Howard W. (1964) MBA, University of Southern California, 1963. Marketing/International Business.
 Call, Ivan T. (1963) DBA, Indiana University, Bloomington, 1969. Financial Management, Management of Financial Institutions.

- Daines, Robert H. (1959) DBA, Indiana University, 1966. Finance.
- Geurts, Michael D. (1975) Ph.D., University of Oregon, 1972. Sales Forecasting, Marketing Research.
- Giaque, William C. (1977) DBA, Harvard University, 1972. Quantitative Business Analysis.
- Hill, Ned C. (1987) Ph.D., Cornell University, 1976. Finance.
- McKinnon, Gary F. (1969) Ph.D., University of Texas, Austin, 1968. Marketing.
- Oaks, Clinton L. (1957) Ph.D., Stanford University, 1955. Business Policy.
- Schill, Ronald L. (1971) Ph.D., University of Oregon, 1971. Industrial Marketing/Procurement, Sales Management.
- Smith, Scott M. (1981) Ph.D., Pennsylvania State University, 1979. Marketing.
- Swinyard, William R. (1978) Ph.D., Stanford University, 1976. Marketing, Consumer Behavior.

Associate Professors

- Adolphson, Donald L. (1980) Ph.D., University of Wisconsin, Madison, 1973. Operations.
- Clarke, Roger Glen (1978) Ph.D., Stanford University, 1978. Managerial Finance.
- Cox, Charles M. (1965) Ph.D., University of Washington, 1978. Corporate Finance.
- Heaton, Hal B. (1982) Ph.D., Stanford University, 1983. Finance.
- Johnson, W. Burke (1973) Ph.D., Stanford University, 1978. Operations Management and Manufacturing Strategy.
- Jenkins, James (1979) Ph.D., Purdue University, 1975. Finance.
- Lambert, William R. (1962) DBA, Indiana University, Bloomington, 1968. Investments.
- Lee, Terry Nels (1970) Ph.D., University of Washington, 1973. Production, Quantitative Methods.
- Rinne, Heikki (1984) Ph.D., Purdue University, 1981. Marketing.
- Sawaya, William J., Jr. (1978) Ph.D., Arizona State University, 1971. Operations Management.
- Smith, Milton E. (1966) Ph.D., University of Utah, 1981. Management of Financial Institutions, Insurance.
- Wilson, Brent D. (1982) DBA, Harvard University, 1979. Finance.

Graduate Program and Degree

Master of Business Administration (MBA)

The Master of Business Administration degree requires four semesters of full-time study. The curriculum has been designed to achieve the twofold task of giving the student (1) a general management education and (2) depth in areas bearing specifically on personal professional interests.

Students who complete the program will have (1) acquired an understanding of business and management tools and principles that have enduring significance in a changing environment, (2) developed advanced knowledge in a field of concentration in the area of the student's major interest, (3) achieved an understanding of the utilization of quantitative methods and behavioral sciences in the solution of business problems, (4) obtained skills in critical analysis and careful reasoning, and (5) strengthened their ability to communicate effectively.

Areas of Specialization

Accounting, health care administration, human resource management/organizational behavior, information systems, international business, marketing, finance, operations management/quantitative methods/systems, business economics.

Master of Business Administration (MBA)

MBA classes are generally not available to students other than those in the following programs: master of business administration, juris doctor/master of business administration, master of business administration/master of accountancy, master of business administration/master in international and area studies, or master of organizational behavior. All first-year MBA classes are required for graduation.

Graduate students from other colleges can add MBA classes on the following bases:

- To add a first-year MBA class (500 series), students are required to submit a formal request to the MBA Executive Committee for approval. Students should understand that first-year classes are not generally available to non-MBA students.
- MBA second-year classes (600 series) can be added with the approval of the professor teaching the course.
- All MBA classes must be added by using an add/drop card and obtaining a signature from the MBA Office.

Executive Master of Business Administration Program

The Executive Master of Business Administration Program is a rigorous off-campus program in general management for professionals in full-time employment. It consists of courses similar to the full-time MBA Program but is unique in reflecting the work and management experience of the Executive MBA Program students. The Executive MBA Program is designed for middle and upper-level managers and professionals who typically have at least four years of full-time work experience.

Obtaining an MBA degree through the Executive MBA Program requires a year-round commitment for two years. Class sessions are generally held two evenings each week and occasionally on Saturdays. Students spend one intensive week on campus each year in a complex case analysis and other concentrated study.

For details concerning admission requirements and application dates, refer to the Graduate School of Management Bulletin or consult the MBA office, 640 TNRB.

Master of Business Administration with Health Care Emphasis

The health care emphasis is an area of concentration that students complete during the second year of the MBA Program. Students must be accepted into the MBA Program before applying to the health administration emphasis and must apply before the end of the second semester of course work in the MBA Program (winter semester of the first year). Obtain details on the application process, the health care administration emphasis, and health care management career counseling from the program coordinator (760 TNRB).

Joint Programs with Other Disciplines

The university has approved three programs whereby qualified students may obtain both the MBA and another graduate degree during a specified period of time by meeting certain requirements.

Joint JD/MBA Program

In law and business administration

Joint MBA/MA Program

In business administration and international and area studies

Joint MBA/MAcc Program

In business administration and accounting

Inquiries about any of these programs should be directed to the MBA Program Office.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Master of Business Administration (MBA)

See the Graduate School of Management Bulletin for details regarding this program.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: GMAT with a minimum score of 500.
 - C. GPA: Minimum 3.0 on 4.0 scale.
- II. Prerequisites:
 - A. Baccalaureate degree from an accredited institution.
 - B. Background in college algebra and a basic course in computer programming is necessary; background in calculus, economics, and statistics is recommended.
- III. Entry time: Fall semester only.

Requirements for Degree

- I. Required courses:
 - A. First-year program: Courses in financial management, marketing management, operations management, managerial economics, macroeconomics and the business environment, business and government, managerial accounting, quantitative methods, computers and management, organizational behavior, written and oral communication, and management simulation.
 - B. Second-year program: Courses in business policy and business, society, and the individual.
- II. Electives: See MBA Policies and Procedures publication.
- III. Areas of concentration: Accounting, health care administration, human resource management/organizational behavior, information systems, international business, marketing, finance, operations management/quantitative methods/systems, or business economics.
- IV. Consult Graduate School of Management Bulletin for additional requirements.

MASTER OF BUSINESS

ADMINISTRATION COURSES

Refer to the Graduate School of Management Bulletin for detailed course descriptions.

- 97R. Mathematics/Computers for Business Analysis. (0) F
500. Corporate Financial Reporting. (2.5) F
501. Managerial Accounting I. (2.5) F
510. Managerial Economics. (2.5) F
511. Macroeconomics and Business Environment. (2.5) W

520. Business Finance I. (2.5) F, W
521. Business Finance II. (2.5) W
530. Statistical Analysis. (2) F
531. Quantitative Methods. (2) F, W
533. Operations Management I. (2.5) W
534. Operations Management II. (2.5) W
540. Organizational Behavior. (2) F, Sp, Su
541. Management and Organization Development. (2) W, Sp, Su
543. Executive Organizational Behavior. (2.5) F
550. Marketing Management I. (2.5) F
551. Marketing Management II. (2.5) W
560. Integrative Exercise. (1) F, W
561. Written and Oral Communication I. (2.5) F
562. Written and Oral Communication II. (2) W
563. Management Simulation. (1) W
582. Ethics. (1.5) W
583. Management and Information Systems. (1.5) W
584. Health Systems. (1.5) W
680. Business Policy. (3) F, W
682. Business, Society, and the Individual. (3) F, W
- Electives**
601. Managerial Accounting II. (3) F, W
602. Federal Income Taxation. (3) F, W
603. Corporate Accountability I. (3) F, W
604. Corporate Accountability II. (3) F, W
605. Auditing and Corporate Control. (3) F, W
606. Seminar in Current Accounting Problems. (3) F, W
610. Advanced Managerial Economics: Theory and Application. (3) F, W
611. National and International Business Environment. (3) F, W
613. Business and Economic Forecasting: Theory and Applications. (3) F, W
- 615R. Seminar in Managerial Economics. (3) F, W, Sp, Su on dem.
618. Personal Financial Planning. (3) W
620. Corporate Financial Strategy. (3) F, W
621. Quantitative Financial Analysis. (3) F, W
622. Investments. (3) F, W
623. Investment Analysis and Portfolio Theory. (3) F, W
624. Capital and Security Markets. (3) F, W
625. Management of Financial Institutions. (3) F, W
626. Seminar in Finance. (3) F, W

- 627. International Finance. (3) F, W
- 628. Futures and Options Markets. (3) F, W
- 629. Silver Fund. (3) F
- 630. Advanced Quantitative Methods. (3) F, W
- 631. Advanced Data Analysis. (3) F, W
- 632. Systems Simulation. (3) F, W
- 634. Advanced Operations Management. (3) F, W
- 635. Systems Analysis and Design. (3) F, W
- 636. Operations Management Seminar. (3) F, W
- 638. Strategic Issues in Manufacturing. (3) F, W
- 640. Dynamics of Interpersonal Behavior. (3) F, W
- 641. Leadership in Organizations. (3) F, W
- 642. Career Development. (3) F, W
- 643. Management Philosophy and Style. (3) F, W
- 644. Advanced Personnel and Human Resource Administration. (3) F, W
Prerequisite: one course in statistics and/or research methodology.
- 645. Managing Organization Cultures. (3) F, W
- 646. Organizational Theory. (3) F, W
- 647. Advanced Seminar in Organizational Behavior. (3) F, W
- 648. The Dynamics of Organization Change: Interventions and Strategies. (3) F, W
- 650. Marketing Research and Information Systems. (3) F, W
- 651. Buyer Behavior and Marketing Decisions. (3) F, W
- 652. Quantitative Methods and Market Analysis. (3) F, W
- 653. Seminar in Marketing. (3) F, W
- 654. Sales Management. (3) F, W
- 655. Retailing Management. (3) F, W
- 656. Organizational Buying, Contracting, and Marketing Processes. (3) F, W
- 657. Product Management. (3) F, W
- 658. International Marketing. (3) F, W
- 659. Industrial Marketing. (3) F, W
- 660. Advanced Strategic Marketing. (3) F, W
- 670. Topics in Healthcare Accounting and Finance. (3) F, W
- 671. Health Care Economics. (3) F, W
- 672. Introduction to Medical Care and Epidemiology. (2) F, W
- 673. Health Care Administration. (3) F, W
- 675. Legal Concepts. (2) F, W
- 676. Health Care Delivery Systems. (2) F, W
- 679. Strategic Planning Methods. (3) F, W

- 683. New Enterprise Management. (3) F, W
- 684. International Business Management. (3) F, W
- 685. Business Law. (3) F, W
- 686. Real Estate Management. (3) F, W
- 687. Risk Management. (3) F, W
- 688. Applied Econometrics. (3) F, W
Prerequisite: ManEc. 200, 301, calculus or equivalent.
- 690. Strategic Planning. (3) F, W
- 691. Field Consulting. (3) F, W
- 692. Business in History. (3) F, W
- 693R. Readings and Conference. (1-3) F, W, Sp, Su
Subject to be arranged with the instructor.

DEPARTMENT OF ORGANIZATIONAL BEHAVIOR

Program Director: J. Bonner Ritchie, 790 TNRB, 378-2666

Faculty/Specialties

Professors

- Cherrington, David J. (1973) DBA, Indiana University, Bloomington, 1970. Personnel Management.
- Dalton, Gene W. (1972) DBA, Harvard University, 1962. Career Planning.
- Keele, Reba L. (1969) Ph.D., Purdue University, 1974. Work and the Family, Mentoring.
- Pace, R. Wayne (1978) Ph.D., Purdue University, 1960. Human Resources, Training and Development.
- Peterson, Brent D. (1972) Ph.D., Ohio University, Athens, 1970. Human Resources, Consulting.
- Ritchie, J. Bonner (1973) Ph.D., University of California, Berkeley, 1968. Organizational Philosophy and Theory.
- Stephan, Eric G. (1968) Ph.D., University of Utah, 1966. Human Resources, Leadership.
- Thompson, Paul H. (1973) DBA, Harvard University, 1969. Career Planning.
- Woodworth, Warner P. (1976) Ph.D., University of Michigan, Ann Arbor, 1974. Industrial Democracy, Worker Ownership.

Associate Professors

- Kirkham, Kate L. (1978) Ph.D., Union Graduate School, 1977. Organizational Development Training.
- Mills, Gordon E. (1971) Ph.D., Pennsylvania State University, 1970. Human Resources, Media Presentation.
- Perry, Lee T. (1985) Ph.D., Yale University, 1982. Human Resource Strategies in Declining Organizations, Behavioral Implications of Mergers and Acquisitions, Organizational Careers, Corporate Strategy in Turbulent Business Environments.
- Wilkins, Alan (1978) Ph.D., Stanford University, 1979. Organizational Culture and Control.

Assistant Professors

- Dyer, W. Gibb, Jr. (1984) Ph.D., Massachusetts Institute of Technology, 1984. *Organizational Evolution/Culture/Management of Family-owned Firms.*
- Meek, Christopher B. (1984) Ph.D., Cornell University, 1983. *Labor-Management Cooperation.*

Graduate Program and Degree**Master of Organizational Behavior (MOB)**

Organizational behavior is a relatively new professional field dedicated to creating compatibility between organizational goals and human values. Emphasizing the applied behavioral sciences, this two-year professional program is designed to prepare competent and ethical specialists. The master's degree program in organizational behavior is small, highly selective, and designed to meet the needs of individuals in two categories: (1) those who later plan to pursue a doctoral degree in organizational behavior and then to enter university teaching, consulting, or equivalent positions in industry; (2) those who wish to take a position in an organization working in human resource management, training and development, labor relations, and internal consulting.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS**Master of Organizational Behavior (MOB)**

See the Graduate School of Management Bulletin for details regarding this program.

Admission and Entry

- I. Application requirements:
 - A. Deadlines: University deadlines apply.
 - B. Entrance examination: GMAT or GRE; score subject to review.
 - C. GPA: Minimum of 3.0 on 4.0 scale for last 60 hours.
- II. Prerequisite: Baccalaureate degree in compatible field.
- III. Interpersonal competence; interests and values consistent with a career in organizational behavior.
- IV. Entry time: Fall semester.

Requirements for Degree

- I. Recommended courses: OrgB. 630 and 689 (fall semester of first and second year); MBA 540, 541; Soc. 521; OrgB. 625, 640, 645, 670.
- II. Electives: Determined in consultation with faculty advisor.
- III. Consult department for additional requirements.

ORGANIZATIONAL BEHAVIOR**GRADUATE COURSES**

Refer to the Graduate School of Management Bulletin for detailed course descriptions.

540. **Organizational Behavior.** (3)
541. **Management and Organization Development.** (2.5)
- 599R. **Internship in HRD.** (3)
Prerequisite: majors only.
606. **Organizational Behavior and Administration.** (3)
610. **Management Philosophy and Style.** (3)

614. **Organizational Communication.** (3)
616. **Industrial Democracy.** (3)
625. **Advanced Personnel and Human Resource Administration.** (3)
630. **Dynamics of Interpersonal Behavior.** (3)
635. **Diagnosing Human Resources and Communication Systems.** (3)
636. **Diversity and Discrimination in Organizations.** (3)
637. **Improving Human Resources and Communication Systems.** (3)
640. **Organizational Theory.** (3)
642. **Career Development.** (3)
645. **Managing Organization Cultures.** (3)
650. **Research Design and Data Analyses.** (3)
651. **Research Methods for Organizational Diagnosis.** (3)
657. **Design, Media, and Computers in Human Resource Development.** (3)
658. **Practicum: Designing Training Programs.** (3)
- 660R. **Advanced Seminar in Organizational Behavior.** (1-3)
- 669R. **Readings in Organizational Behavior.** (1-6)
670. **The Dynamics of Organization Change: Interventions and Strategies.** (3)
672. **The Consultative Process.** (3)
- 679R. **Practicum in Organizational Development.** (1-9)
680. **Organization Behavior Research Report.** (3)
Prerequisite: majors only.
- 689R. **Continuous Professional Development Seminar.** (1-3)
Prerequisite: majors only.

SCHOOL OF ACCOUNTANCY

Director: G. Fred Streuling, 540 TNRB, 378-3100
Associate Directors: Dale H. Taylor, 560 TNRB, 378-6378;
Ernest Dee Hubbard, 564 TNRB, 378-3268

Faculty/Specialties**Professors**

- Albrecht, Wm. Steve (1977) Ph.D., University of Wisconsin, 1975. *Financial/Audit Systems.*
- Cameron, James B. (1969) Ph.D., Montana State University, 1967. *Financial/Audit Systems.*
- Cherrington, Jay Owen (1978) Ph.D., University of Minnesota, Minneapolis, 1972. *Financial Systems.*
- Garrison, Ray H. (1966) DBA, Indiana University, Bloomington, 1966. *Managerial Accounting.*
- Hansen, James V. (1982) Ph.D., University of Washington, 1973. *Information Systems.*

- Hardy, John W. (1969) Ph.D., University of Texas, Austin, 1972. Managerial Accounting.
- Hubbard, Ernest Dee (1959) Ph.D., University of Washington, 1967. Managerial Accounting.
- Johnson, Eldred A. (1955) Ph.D., University of Utah, 1968. Systems/Managerial Accounting.
- McAllister, LeRay L. (1963) DBA, Arizona State University, 1971. Financial/Audit/Not-for-Profit Accounting.
- McDermott, Richard E. (1984) Ph.D., Oklahoma State University, 1984. Financial/Information Systems.
- McKell, Lynn J. (1974) Ph.D., Purdue University, 1973. Information Systems.
- Orton, Bryce B. (1961) Ph.D., University of Washington, 1962. Managerial Accounting.
- Radebaugh, Lee Howard (1980) DBA, Indiana University, Bloomington, 1973. International Business.
- Randall, Boyd C. (1974) Ph.D., University of Minnesota, 1972. Tax.
- Romney, Marshall B. (1977) Ph.D., University of Texas, Austin, 1977. Audit/Systems Accounting.
- Skousen, K. Fred (1970) Ph.D., University of Illinois, Urbana, 1968. Financial Accounting.
- Smith, Jay M., Jr. (1971) Ph.D., Stanford University, 1965. Financial/Audit Systems.
- Streuling, G. Fred (1976) Ph.D., University of Iowa, 1971. Tax.
- Taylor, Dale H. (1963) Ph.D., Northwestern University, 1963. Financial Accounting.
- Woodfield, Leon W. (1960) DBA, Michigan State University, 1965. Financial Accounting.

Associate Professors

- Gardner, Robert L. (1978) Ph.D., University of Texas, Austin, 1979. Tax.
- Howe, Keith R. (1979) DBA, Arizona State University, 1979. Managerial Accounting.
- Sonderegger, Emory O. (1960) M.S., Brigham Young University, 1957. Financial Accounting.
- Stewart, Dave Nelson (1980) Ph.D., University of Florida, 1980. Tax.
- White, J. Morgan (1967) M.S., Brigham Young University, 1958. Tax.

Assistant Professors

- Dalebout, Richard S. (1975) SJD, University of Utah, 1971. Business Law.
- Palmer, Glen O. (1964) M. Acc., Brigham Young University, 1963. Tax.
- Peterson, Fredric G. (1973) Ph.D., University of Utah, 1973. Quantitative Methods.
- Stocks, Kevin D. (1983) Ph.D., Oklahoma State University, 1981. Managerial Accounting, Information Systems.

Graduate Program and Degree

Master of Accountancy (M. Acc.)

The Master of Accountancy (M. Acc.) Program, administered through the School of Accountancy (SOA) within the Graduate School of Management, offers a general background in accounting, with an emphasis on business-related subjects and an in-depth study of one or more areas of accounting specialization. The M. Acc. degree is awarded on completion of a three-year professional program, which can begin as early as the junior year of the undergraduate program and culminate in the Graduate School of Management after the fifth year. Students entering the

SOA Program with a baccalaureate degree in accounting from another university can complete the program in fewer than two years.

Joint Programs

The university has approved two joint programs whereby qualified students may obtain both the M. Acc. and another graduate degree during a specified period of time by meeting certain requirements.

1. Joint JD/M. Acc. program in law and accounting.
2. Joint M. Acc./MBA program in accounting and business administration.

Inquiries regarding these programs should be directed to the School of Accountancy.

General University Requirements

See General Information section of this catalogue for university requirements that apply to all departments.

PROGRAM AND DEGREE REQUIREMENTS

Master of Accountancy (M. Acc.)

Refer to the Graduate School of Management Bulletin and the School of Accountancy Student Guide and Handbook for details regarding this program. The following outline does not represent the full range of requirements and opportunities in the program.

Admission and Entry

I. Application requirements.

- A. Deadlines: February 20 for fall semester entrance; May 30 for winter semester entrance. International students should submit their applications one month earlier.
- B. Entrance examination and GMAT with minimum score of 500.
- C. Complete SOA application.
- D. GPA. Minimum of 3.0.

II. Prerequisites.

- A. Completion of specified business fundamental courses. Acc. 201, 203, 204, IM 233; Econ. 110; ManEc. 200; Math. 119; Stat. 222.
- B. Minimum 60 semester hours of college credit.
- C. Most general education and university requirements completed.

III. Entry time: Fall semester.

Requirements for Degree

I. Required courses:

- A. First year (for students seeking B.S. and M. Acc. concurrently): Acc. 342, 401, 402, 411, 412, 421, 451; BusM. 341; ManEc. 301; IM 320.
- B. Common requirements: Acc. 503, 561; BusM. 402; IM 641, 642, 643; OrgB. 540; PMgr. 682.
- C. Phase 2 specialties.
 1. Information Systems—Auditing: Acc. 505, 522, 532 552, 553, 562, 609, 656, 657, 691R, two of elective group A (OrgB. elective, Acc. 674, ManEc. 353), two of elective group B (other specified GSM courses).
 2. Information Systems—Consulting: Acc. 376, 532, 552, 553, 562, 609, 655, 656, 657, 691R, two of elective group A (OrgB. elective, MBA 630, MBA Financial set 620–627), two of elective group B (other specified GSM courses).

3. Management Accounting: Acc. 532, 552, 566, 612, 674, 691R, MBA 563, 680 (or Acc. 675), 624 (or ManEc. 353), 630 (or Acc. 632), two of elective group A (Acc. 505, 522, 553), three of elective group B (other specified GSM courses).
4. Tax: Acc. 505, 523, 609 (or MBA 680), 620, 621, 622, 623, 624, ManEc. 575, two of elective group A (Acc. 625, 626, 627, 628, 629), one of elective group B (Acc. 507, 553, 562, 566, 584, 657), one of elective group C (Acc. 532, Financial ser 620–628, 686, 687, OrgB. 642), one of elective group D (Acc. 343, 599R, other specified GSM course or any law course except Law 601, 640, 641).

II. See School of Accountancy for additional requirements. This program is best completed in the manner and sequence recommended by the school.

ACCOUNTANCY GRADUATE COURSES

See the Graduate School of Management Bulletin for detailed course descriptions.

503. Intermediate Accounting III. (3)

Prerequisite: Acc. 402.

505. Special Problems in Accounting I. (3)

Prerequisite: Acc. 402.

506. Special Problems in Accounting II. (2)

Prerequisite: Acc. 402.

507. Accounting for Nonprofit Organizations. (3)

Prerequisite: Acc. 202 or 204.

522. Advanced Taxation. (3)

Prerequisite: Acc. 421.

523. Tax Research Methodology. (3)

Prerequisite: Acc. 421.

532. Advanced Mathematics of Business. (3)

Prerequisite: calculus.

552. Applications Computing. (3)

Prerequisite: Acc. 451 and admission to School of Accountancy or consent of director.

553. Data Base Systems. (3)

Prerequisite: Acc. 451 or MBA 635 and admission to School of Accountancy or consent of director.

554. Information Systems Analysis. (3)

561. Auditing. (3)

Prerequisite: Acc. 401, 551.

562. Financial Auditing Methodology. (3)

Prerequisite: Acc. 461.

566. Internal Auditing. (3)

Prerequisite: basic financial and managerial accounting.

580. Professional Ethics. (2)

584. International Accounting and Multinational Enterprises. (3)

Prerequisite: School of Accountancy or Graduate School of Management student.

586. Contemporary Professional Accounting Problems. (3)
Prerequisite: Acc. 421, 461, 503, 505 or concurrent registration.

587. Contemporary Management Accounting Problems. (3)

599R. Accounting Internship. (3V)

609. Professionalism, Policy in an Accounting Environment. (3)

Prerequisite: Acc. 503.

612. Managerial Cost Accounting. (2)

613. Seminar in Resource Allocation and Control. (3)

615. Income Tax Considerations of Managerial Decisions. (3)

620. Special Problems in Federal Taxation. (3)

Prerequisite: Acc. 421 or concurrent registration.

621. Corporate Taxation I. (3)

Prerequisite: Acc. 523 or concurrent registration.

622. Corporate Taxation II. (3)

Prerequisite: Acc. 523 or concurrent registration.

623. Taxation of Partnerships. (3)

Prerequisite: Acc. 523 or concurrent registration.

624. Taxation of Estates, Gifts, and Fiduciaries. (3)

Prerequisite: Acc. 523 or concurrent registration.

625R. Current Tax Policy. (1–3)

Prerequisite: Acc. 523 or concurrent registration.

626. Taxation of Deferred Compensation and Fringe Benefits. (3)

Prerequisite: Acc. 523 or concurrent registration.

627. Taxation of Exempt Organizations. (3)

Prerequisite: Acc. 523 or concurrent registration.

628. Taxation of Foreign Income. (3)

Prerequisite: Acc. 523 or concurrent registration.

629. Tax Planning for Families and Organizations. (3)

Prerequisite: Acc. 523, 624, or concurrent registration.

632. Quantitative Analysis in Business. (3)

Prerequisite: Acc. 532.

655. Management of Information Systems. (3)

Prerequisite: Acc. 553 or 554.

656. Computer Networks. (3)

Prerequisite: Acc. 451 or MBA 635, and admission to School of Accountancy or consent of director.

657. Management Consulting. (3)

Prerequisite: Acc. 451 or MBA 635, and admission to School of Accountancy or consent of director.

658. Seminar on Information Systems Services. (3)

665. EDP Auditing and Audit Sampling. (3)

Prerequisite: Acc. 461.

674. Advanced Financial Management. (3)

Prerequisite: BusM. 402, Acc. 412.

675. Business Policy I. (3)

681. Regulatory Agencies. (2)

687R. Seminar in Accounting and Reporting Problems.
(1-3)

691R. Research Seminar. (2)

693R. Reading and Conference. (1-3)
Subject to be arranged with instructor.

CAMPUS FACILITIES AND OPPORTUNITIES

CULTURAL AND RECREATIONAL RESOURCES

One of the cultural centers of the intermountain region, Brigham Young University offers a wealth of opportunities for students and community members interested in the cultural arts. Already the home of two major museums—the Monte L. Bean Life Science Museum, which recently exhibited the famed Ramses II collection, and the Museum of Peoples and Cultures—the university will soon have an exceptional new facility to house its large art collection. In addition to maintaining a variety of theatres, concert halls, and art galleries for study and performance in drama, music, dance, and the visual arts, BYU sponsors performing arts series that bring to the campus some of the world's most acclaimed musicians. Other offerings include the Honors Program cultural arts series; the International Cinema, which shows several foreign films weekly; ASBYU-sponsored lectures by national figures; and college and department-sponsored lectures by noted scholars. Moreover, BYU supports a professional motion picture studio as well as an educational television station and an FM radio station that broadcast a wide spectrum of quality programs.

Of prime importance are the general forums and devotional assemblies which, on selected Tuesdays at 11 a.m., draw together the entire campus to be addressed by accomplished scholars, thinkers, and Church authorities. Just 45 miles north of Provo is Salt Lake City, home of numerous theatrical, dance, and musical groups, among them Ballet West and the Utah Symphony.

BYU is also known for its exceptional athletic program, which has achieved national prominence in recent years in men's basketball, football, and golf and women's volleyball and tennis. The Marriott Center, the second largest on-campus indoor arena in the nation, seats 23,000; and the football stadium seats 65,000.

Opportunities abound for the participant as well as the spectator through BYU's large intramural program, in which thousands of students participate in 60 different events. BYU also has an extensive extramural program in sports such as lacrosse, softball, and soccer that are not included in the regular intercollegiate program.

Situated at the foot of the Wasatch Mountains, BYU offers students a wealth of outdoor recreational opportunities, including some of the best skiing and hiking in the world. Furthermore, Utah's vast desert wilderness and canyon country begins just a few hours from the campus.

CAMPUS SERVICES OF INTEREST TO GRADUATE STUDENTS

Note: Most specific services for graduate students are provided at the departmental level; therefore, the following items present only the most general information. Information related to specific interests, such as employment in a particular department, is available in individual departments.

Campus Privileges for Graduate Students

Graduate students who are registered for at least 2 hours per semester or 1 hour per term, receive a university (ID) activity card and are eligible for all on-campus privileges afforded students who are registered full-time, i.e., eligibility for on-campus employment, student housing, student insurance, intramurals, use of physical education facilities, graduate parking stickers, and discount admission to sporting and cultural events.

ID Center

333 ELWC, 378-5092

The ID (Identification) Center provides BYU photo identification cards to BYU students. When properly validated for the current semester or term, these cards allow students the campus privileges described above. During the first two weeks of each semester or term, the photo ID cards are produced and the activity validation is provided in a designated place in the Wilkinson Center. Thereafter, cards are available at the ID Center. All ID distribution and validation locations also serve as screening areas for the dress and grooming standards outlined by the university.

Information Systems Services

Executive Director: Willard H. Gardner, 167B TMCB,
378-5025

Information Systems Services provides extensive computing and micrographics facilities for faculty, staff, and student use. Experienced personnel, a sizeable library of computer programs, and state of the art equipment are available to assist with particular problems and training.

Media Services

Managing Director: D. Dean VanUitert, 250 FB, 378-4391

Media (Audiovisual) Services provides and maintains an extensive collection of films, videotapes, and audiotapes that serve a broad range of campus needs.

STUDENT LIFE

Opportunities available through the extracurricular division of the university called Student Life are many and varied, ranging from all student government (ASBYU) functions and activities to counseling and health services.

Dean of Student Life: Maren M. Mouritsen, Assistant Executive Vice-President, 380 SWKT, 378-4668
Associate Dean: Clyde E. Sullivan, 169 SWKT, 378-6291
Assistant Dean: Ryan L. Thomas, 380 SWKT, 378-4771

Student Union: The Ernest L. Wilkinson Center

The Ernest L. Wilkinson Center is a place where students may go to relax and participate in out-of-class activities that will foster personal enjoyment and growth. The center is also the headquarters for ASBYU student association activities and the student newspaper, the *Daily Universe*.

The games center, bowling alleys, copy center, photo studio, barbershop, post office, lost and found department, and outdoor rental operation are all on the first level. Facilities on the second level (main floor) include ballrooms, an art gallery, computer rooms, reading and stereo rooms, a television area, and a movie theater. The university bookstore and three restaurants are some of the Wilkinson Center's most important components.

Bookstore

The BYU Bookstore, housed in the Ernest L. Wilkinson Center, offers a variety of merchandise and services to students, faculty, and staff. Textbooks, school supplies, and a large selection of trade books constitute most of the stock, but students can also buy such items as computer hardware and software, art and office supplies, gifts, cosmetics, clothing and sportswear, records and stereos, cameras, athletic supplies, and video equipment. The Bookstore offers other services such as check cashing and film processing as well.

Religious Opportunities

Students have many excellent opportunities to participate in religious activities at BYU.

BYU Wards and Stakes. The Church of Jesus Christ of Latter-day Saints is organized on campus into a number of stakes composed of several wards (congregations) of 200 to 300 members each. The stakes and wards are organized specifically to give individuals maximum opportunity for Church activity. Spiritual growth and a strong testimony of the divinity of Jesus Christ are goals fostered by the campus stake and ward organizations, whose programs are correlated at all levels with the activities of the university.

All single students living away from home who are members of The Church of Jesus Christ of Latter-day Saints become members of one of the BYU wards. Married students not living in university housing may attend either a BYU ward or the city ward in which they live.

Other Religious Denominations. Approximately 25 other religious denominations are represented by BYU students. These students are encouraged to attend the congregation of their faith in the Provo area.

Devotionals and Sixteen-Stake Firesides. On selected Tuesdays at 11 a.m. throughout the year, General Authorities and other leaders of the Church speak to a general assembly of faculty and students in the Marriott Center. Their timely messages remind students of the importance of the spiritual dimension to the educational experience and encourage commitment, faith, and moral behavior. Furthermore, once a month, usually the first Sunday evening, Church leaders speak to students in fireside services.

Student Health Center

Director: Dr. Bruce H. Woolley, 172 MHC, 378-2771

Student health services are available to all full-time students at the Howard S. McDonald Student Health Center. Hospitalization, when necessary, is available locally at the Utah Valley Regional Medical Center. The Health Center offers emergency care, consultation with nurses or physicians by appointment, immunization, pharmacy service, physical therapy, laboratory tests, and X-ray examinations. A brochure describing student health and insurance plans is available at the Health Center or the Insurance Office, West Crandall House (378-4468).

Counseling and Development Center

Director: Clyde E. Sullivan, 149 SWKT, 378-3035

Personal counseling services are available to assist full-time students to deal effectively with personal problems that are interfering with their education. Counselors are well-trained psychologists who operate within strict principles of confidentiality. Counseling may be on an individual basis, a group basis, or a combination of both. Students for whom these services are not appropriate will be referred to a mutually acceptable alternative. Assistance with stress management is also available.

Multicultural Programs

Director: Max W. Swenson, 121 KMB, 378-2843

Students come to BYU from each of the 50 states as well as from more than 70 foreign countries. Because of the large number of international students, the Office of Multicultural Programs administers and conducts programs designed to help minority and international students succeed by providing these students with support functions critical to their welfare at the university. These functions include providing services in the following three areas:

1. International Student Office

Advisor: Enoc Q. Flores, 121 KMB, 378-2844

This office provides advisement and services to all international students, visitors, exchange scholars, aliens with permanent residence in the United States, and other interested parties within the university community.

2. Academic Concerns Office, 135 KMB, 378-3829

Personnel in this office offer minority and international students academic and personal advisement and tutoring help.

3. Financial Aids, 126 KMB, 378-3065

This office provides assistance to minority and international students in locating possible financial sources for grants and scholarships. The office also assists American Indian students in securing tribal scholarships and provides limited work-study opportunities to students.

Nontraditional Students

173 SWKT, 378-6290

The Nontraditional Student Office welcomes students 25 and older who are returning to college after a long break or beginning their university education at a mature age. To enhance this learning opportunity and to help ease the transition from non-student to student status, the office provides three main services.

First, an individualized counseling service addresses mature students' concerns. Second, students are made aware of the different resources and services available on campus and in the community that may meet some of their needs. Third, the office sponsors a support group in which interested nontraditional students can meet together regularly. In addition, the office organizes occasional activities of particular interest to the non-traditional student.

Special Student Research Grants

Research Grants and Student Funding Board

ASBYU Academics Office, 434 ELWC, 378-7176

Although most financial assistance for graduate students is arranged by individual departments, some student research grants are available through ASBYU. Also, the Student Funding Board can provide partial funding for a limited number of students to cover travel expenses and other costs if, for instance, a student is invited to read a paper at another university or if a student wishes to participate in a professional conference.

Women's Research Institute Grants

Director: Mary E. Stovall, 940 SWKT, 378-4609

Initially established in 1978, the Women's Research Institute became a part of the College of Family, Home, and Social Sciences in September 1983. Since then the institute has awarded research fellowships to upper-division and graduate students for conducting research on women and women's issues. Faculty grants became available through the institute in 1984.

Handicapped Student Services

Coordinator: Norman Roberts, 390 SWKT, 378-2767

BYU offers a number of different services to students with physical or learning disabilities. Hearing-impaired students can arrange for qualified sign language interpreters and TDD communications. Visually impaired students can be provided with a list of readers, library lockers, reading rooms, Visualteks, an adapted computer with enlarged screen print and speech synthesizer, taped textbooks, cassette players, and braille writers. In addition, the coordinator of Handicapped Student Services is available to ensure that students with mobility limitations have access to classes and other facilities.

Veterans Affairs

390 SWKT, 378-4371

The Veterans Affairs office certifies the enrollment of eligible veterans or their dependents for educational benefits from the Veterans Administration. Information and assistance in applying for these benefits is available from this office.

Ombudsman

ASBYU, 436 ELWC, 378-4132

The Ombudsman's Office investigates and expresses conclusions when a student is aggrieved by an official's action or inaction and acts as an impartial mediator in resolving disputes between students and businesses, organizations, or individuals. Basic legal advice is also provided by this office.

POLICE AND TRAFFIC

B-66 ASB, 378-2222

The University Police department is established for the benefit and protection of all members of the BYU community. All officers are certified by the state and are responsible for enforcing state and federal laws as well as campus rules and regulations. All matters requiring police assistance, or fire and ambulance services, should be directed to this office, 378-2222.

Vehicle Registration and Parking Permits

GRNH, 378-3906

Parking and traffic control are the responsibility of the University Police Traffic Services, located in the Traffic Office east of the Carillon Bell Tower on 1430 North. All BYU students who intend to park in student lots during restricted hours (7 a.m.—4 p.m., Monday through Friday) must register their motor vehicles with the Traffic Division and obtain a parking sticker. Parking stickers are also available in the ELWC during the first week of each semester or term.

To obtain a permit, a student must present the following at the Traffic Office:

1. State vehicle registration certificate
2. The appropriate fee for the parking sticker
3. University identification card

Graduate students may purchase any of the following stickers, depending on their individual circumstances:

1. Zone Y (students living off-campus)
2. Zone Y Motorcycle (students living off-campus)
3. Zone C (students living on-campus in single housing)
4. Zone G (graduate students only—valid only during fall and winter semesters)
5. Zone H (handicapped)

Driver's License Compact

Students who are residents of Utah or of a state other than those listed below must have a Utah driver's license if they want to drive in Utah. The following states have entered into a compact, and a driver's license from any of them is acceptable in all others:

Alabama	Indiana	New Mexico
Arizona	Iowa	New York
Arkansas	Kansas	Oklahoma
California	Louisiana	Oregon
Colorado	Maine	Tennessee
Delaware	Mississippi	Utah
Florida	Montana	Virginia
Hawaii	Nebraska	Washington
Idaho	Nevada	West Virginia
Illinois	New Jersey	Wyoming

Out-of-State Plates

Students driving vehicles with out-of-state plates must obtain a Utah state nonresident student permit (cost \$1) at the Traffic Office.

If a student is married and his or her spouse is a nonstudent employed full-time, then the vehicle must be licensed in the state of Utah and cleared for tax payment at the Utah Motor Vehicles Division, temporarily located at 180 North 200 West, Provo. Also, emissions testing for all vehicles registered in Utah County must be performed before license plates can be obtained.

Faculty and staff personnel with out-of-state plates must license their vehicles with the state of Utah and clear them for tax payment before they can receive campus parking permits.

Bicycle Registration

All bicycles that are operated, parked, or stored on campus by any student, employee, or visitor must display a current Provo, Orem, Springville, or other Utah County city bicycle license. The fee for a Provo bicycle license is \$1. Provo city bicycle licenses can be obtained at the Traffic Office or at the Provo City Center, 359 West Center.

Other Regulations

Traffic and bicycle rules and regulation booklets are available at no charge from the Traffic Office. All students, faculty, and staff members are responsible for the information in these booklets.

HOUSING

Housing Office, C-141 ASB, 378-2611

Student housing is available both on campus and in the surrounding communities; policies have been established within campus residence halls and with off-campus landlords to integrate living experiences with the complete educational experience.

Campus Housing: Single Students

Campus housing for single students includes room-and-board residence halls and apartment-type facilities. Helaman Halls and Deseret Towers, the two residence hall complexes, reserve specific floors for graduate students desiring room-and-board housing. Each hall contains student rooms, study rooms, recreation areas, central shower areas, laundry and storage facilities, and a head-resident apartment. The central buildings for Deseret Towers and Helaman Halls feature cafeterias, dining rooms, reception areas, post offices, computer rooms, a reading and writing laboratory, and vending facilities for the entire residence area.

Heritage Halls provides housing for women and men in 24 apartment-type buildings. Each apartment has a combination kitchen-dining-study room, three bedrooms, and a bath. In addition, there are large living rooms, a recreation room, a head resident apartment, and laundry and storage facilities in each building. Usually, six people live in each apartment. The apartments are completely furnished except for bedding and kitchen items.

A final option for single students lies in the **Foreign Language Houses**. The College of Humanities sponsors residences where students pledge to speak only the foreign

language in the house while they live and study together under the supervision of a faculty advisor and a native speaker. Participating graduate students sometimes serve as interns or instructors in these houses. For details students should write or call the foreign language departments listed in this catalogue or the director of Foreign Language Housing, 2054 JKH, 378-5038.

Campus Housing: Student Families

Family accommodations for 968 student families are provided in Wymount Terrace and Wyview Park. Wymount Terrace consists of family apartments arranged around lawn areas and playgrounds. Each apartment is furnished with an electric or gas range, refrigerator, drapes, and garbage disposal. A limited amount of furniture is available for rent from the university. These apartments are not plumbed or wired for washers and dryers, but the complex has five self-service laundry centers. Four apartment sizes are available, assigned according to family size.

Wyview Park consists of one, two, and three-bedroom mobile homes placed on permanent foundations and connected to power, water, and sewer lines to provide the conveniences of permanent homes. Each unit is equipped with air conditioning, refrigerator, garbage disposal, built-in gas range, carpeting in the living room and bedrooms, and built-in chests of drawers. A laundromat, a children's play area, an adult recreation area, a community assembly room, a community park, and a dairy products outlet are also nearby.

Applications for Campus Housing

Students who plan to enroll at BYU and live in a university residence hall or a student family complex are advised to obtain the appropriate housing application from the Office of Student Housing at least one year in advance. The completed application should then be returned to the university with the appropriate fee: \$25 for single student housing and \$10 for family student housing. Housing assignments and agreement forms are prepared according to the date the application is received by the Housing Office; they are mailed in late spring or early summer. Validation of any campus housing reservation is, of course, contingent upon the student's official acceptance and admission to the university. Agreements are usually made for the academic school year (two semesters), but graduate students may sign contracts for individual semesters.

Off-Campus Housing

110 GRSB, 378-5066

The BYU Off-Campus Housing Office aids students in finding off-campus housing, encourages landlords to maintain and improve rental facilities, advises students and landlords in their relationships with one another, and attempts to assure that BYU living standards are maintained off campus. To help achieve these ends, unmarried BYU graduate students are encouraged to live in university-approved housing. At present, more than 24,000 rental spaces have been approved by the university for off-campus living.

BYU Housing Referral Service

The Off-Campus Housing Office maintains a complete referral service for all university-approved rental facilities. Thousands of rental units of all types are available, including large apartment

complexes, condominiums, duplexes, houses, basement apartments, and sleeping rooms. Some housing for married students is also listed, though family student housing is not subject to university approval.

Detailed lists of current vacancies are available at the Housing Information Window, C-141, ASB from 8 a.m. to 5 p.m. Monday through Friday. Because such lists are constantly updated, they are not sent to prospective renters through the mail. However, a guide with essential rental data on the large apartment complexes will be mailed on request. Counselors are also available to help students who have problems finding suitable off-campus housing.

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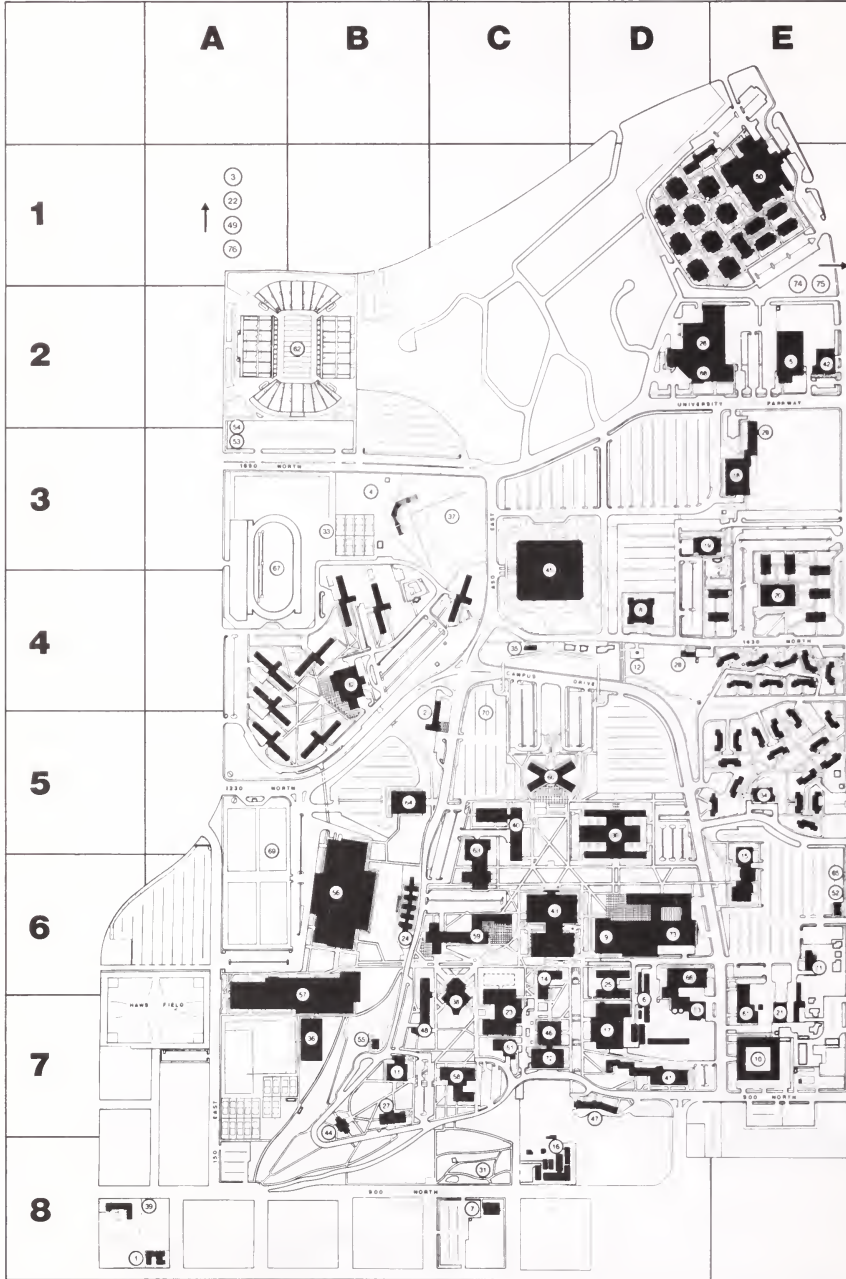
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